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ENVIRONMENTAL ASSESSMENT OF AIRPORT DEVELOPMENT
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ENVIRONMENTAL ASSESSMENT OF AIRPORT DEVELOPMENT ACTIONS APPENDIX VOLUME



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FINAL REPORT

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U.S. DEPARTMENT OF TRANSPORTATION
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Office of Airports Programs
Washington, D.C. 20591

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| 16. Abstract This volume supplements the principal report--Environmental Assessment of Airport Development Actions. It contains copies of pertinent laws, regulations and orders including the National Environmental Policy Act, CEQ Guidelines, and the FAA order on processing airport development actions affecting the environment. It includes information on the environmental assessment requirements of the various states. It provides specific data on aircraft noise and the impact of noise on people. This volume also contains pertinent reference material and guidelines on flood hazards, coastal zones, air quality, relocation, protection of historic and cultural resources, and prime and unique farmland. | | |
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APPENDIX A

THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969, AS AMENDED*

An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Environmental Policy Act of 1969."

PURPOSE

SEC. 2. The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

SEC. 101. (a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve

*Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-83, August 9, 1975.

and coordinate Federal plans, functions, programs, and resources to the end that the Nation may--

- (1) Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
- (2) Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings;
- (3) Attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
- (4) Preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;
- (5) Achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
- (6) Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

SEC. 102. The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall--

(A) Utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

(B) Identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations;

(C) Include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on--

- (i) The environmental impact of the proposed action,
- (ii) Any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) Alternatives to the proposed action,
- (iv) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1, 1970, for any major Federal action funded under a program

of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

- (i) the State agency or official has statewide jurisdiction and has the responsibility for such action,
- (ii) the responsible Federal official furnishes guidance and participates in such preparation,
- (iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and
- (iv) after January 1, 1976, the responsible Federal official provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto which may have significant impacts upon such State or affected Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this Act; and further, this subparagraph does not affect the legal sufficiency of statements prepared by State agencies with less than statewide jurisdiction.

(E) Study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(F) Recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) Make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(H) Initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) Assist the Council on Environmental Quality established by title II of this Act.

Sec. 103. All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

Sec. 104. Nothing in section 102 or 103 shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

Sec. 105. The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

Sec. 201. The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as

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the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban and rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

SEC. 202. There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, esthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

SEC. 203. The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

SEC. 204. It shall be the duty and function of the Council—

(1) To assist and advise the President in the preparation of the Environmental Quality Report required by section 201;

(2) To gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;

(3) To review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;

(4) To develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;

(5) To conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;

(6) To document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary

data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;

(7) To report at least once each year to the President on the state and condition of the environment; and

(8) To make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

SEC. 205. In exercising its powers, functions, and duties under this Act, the Council shall—

(1) Consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order No. 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments and other groups, as it deems advisable; and

(2) Utilize, to the fullest extent possible, the services, facilities and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

SEC. 206. Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates (5 U.S.C. 5313). The other members of the Council shall be compensated at the rate provided for Level IV of the Executive Schedule Pay Rates (5 U.S.C. 5315).

SEC. 207. There are authorized to be appropriated to carry out the provisions of this Act not to exceed \$300,000 for fiscal year 1970, \$700,000 for fiscal year 1971, and \$1 million for each fiscal year thereafter.

Approved January 1, 1970.

Department of Transportation

Office of the Secretary

Washington, D.C.

ORDER

DOT 5610.1B

9-30-74

SUBJECT: PROCEDURES FOR CONSIDERING ENVIRONMENTAL IMPACTS

1. **PURPOSE.** This Order establishes procedures for consideration of environmental impacts through preparation and use in decision making of detailed environmental impact statements. Where required, these statements serve as the single vehicle for environmental findings, determinations, and clearances on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment.
2. **CANCELLATION.** DOT 5610.1A, PROCEDURES FOR CONSIDERING ENVIRONMENTAL IMPACTS, dated October 4, 1971.
3. **AUTHORITY.** This Order provides instructions for implementing Section 102(2)(C) of the National Environmental Policy Act of 1969 (P.L. 91-190, hereinafter "NEPA"); Sections 2(b) and 4(f) of the Department of Transportation Act of 1966 (P.L. 89-670, hereinafter "the DOT Act"); Section 309 of the Clean Air Act of 1970, as amended (Section 12(a) of P.L. 91-604, hereinafter "the Clean Air Act"); Section 106 of the National Historic Preservation Act of 1966 (P.L. 89-665, hereinafter "the Historic Preservation Act"); Sections 303 and 307 of the Coastal Zone Management Act of 1972 (P.L. 92-583); Section 2 of the Fish and Wildlife Coordination Act (P.L. 85-624); and various Executive Orders relating to environmental impacts. In addition, the Order provides instructions for implementing, where environmental statements are required, Sections 138 and 109 of Federal-aid highway legislation (Title 23, United States Code, hereinafter "the Highway Act"), Sections 16 and 18(4) of the Airport and Airway Development Act of 1970 (P.L. 91-258, hereinafter "the Airport Act"), and Section 14 of the Urban Mass Transportation Act of 1964 (49 U.S.C. Section 1601 et seq., hereinafter "the Mass Transportation Act").

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1. INTENT. Officials of the Department of Transportation (hereinafter "DOT" or "the Department") must comply with both the procedures and the intent of the National Environmental Policy Act of 1969 ("NEPA"). The purpose of the environmental assessment and consultation process is to provide Department officials and other decision makers, as well as members of the public, with an understanding of the potential environmental effects of proposed actions significantly affecting the quality of the human environment; to avoid or minimize adverse effects wherever possible; to restore or enhance environmental quality to the fullest extent practicable; to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites; to avoid or minimize undesirable consequence to the environment; and to preserve, restore, and improve wetlands. NEPA requires Federal officials "to use all practical means, consistent with other essential considerations of national policy, and to improve and coordinate Federal plans, functions, programs, and resources", to carry out national environmental objectives; and, in effect, integrates national environmental objectives into existing Departmental policies and missions. The environmental impact statement process should be used to explore and document alternative actions that will avoid or minimize adverse impacts, and to evaluate both the long and short term implications to man and his physical and social surroundings, and to nature. In making decisions, environmental assessments must be considered along with assessments of economic, technical, and other benefits. In short, the environmental statement serves as the record of compliance with the policy, as well as the procedures, of NEPA and it should reflect a thorough review of all relevant environmental factors.
2. BACKGROUND.
 - a. NEPA establishes a broad national policy to promote efforts to improve the relationship between man and his environment, and provides for the creation of a Council on Environmental Quality (hereinafter "CEQ"). NEPA sets out certain policies and goals concerning the environment, and requires that, to the fullest extent possible, the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with those policies and goals.

- b. Section 102 of NEPA is designed to insure that environmental considerations are given careful attention and appropriate weight in all decisions of the Federal Government. Section 102(2)(C) requires that all agencies of the Federal Government shall

"include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on --

- (i) the environmental impact of the proposed action;
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the proposed action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

"Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by Section 552 of Title 5, United States Code, and shall accompany the proposal through the existing agency review processes..."

- c. Section 102(2)(A) of NEPA requires all agencies of the Federal Government to "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making which may have an impact on man's environment..."
- d. Executive Order 11514, Protection and Enhancement of Environmental Quality, dated March 4, 1970, orders all Federal agencies to "initiate measures needed to direct their policies, plans, and programs so as to meet national environmental goals."
- e. Guidelines from the President's Council on Environmental Quality (38 F.R. 20549, 40 C.F.R. 1500 et seq., August 1, 1973) provides guidance to agencies for preparation of environmental impact statements.
- f. DOT N 1100.37, Realignment of Functions Within the Office of the Secretary, dated February 5, 1973, transferred to the Assistant Secretary for Environment, Safety, and Consumer Affairs (hereinafter "TES") the responsibility for environmental matters formerly vested in the Assistant Secretary for Environment and Urban Systems. These responsibilities include overseeing the Department's response to NEPA, in terms both of policies and procedures, in cooperation with the General Counsel (hereinafter "TGC").
- g. Section 4(f) of the DOT Act and Section 138 of the Highway Act state, "It is hereby declared to be the national policy that special effort should be made to preserve the natural beauty of the countryside and public parks and recreational lands, wildlife and waterfowl refuges, and historic sites. The Secretary ... shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance as determined by the Federal, State, or local officials having jurisdiction thereof, or any land from an historic site of national, State, or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife and waterfowl refuge, or historic site resulting from such use."

9-30-74

- h. Section 16(c)(1)(A) of the Airport Act provides that an airport development project may be approved only if the Secretary is satisfied that the project is reasonably consistent with plans (existing at the time of approval of the project) of planning agencies for development of the area in which the airport is located.
- 1. Section 16(c)(3) of the Airport Act requires consideration of the interests of communities in or near which airport development projects are proposed.
- j. Section 16(c)(4) of the Airport Act directs that each airport development project "provide for the protection and enhancement of the natural resources and the quality of environment of the Nation"; and provides that the Secretary may not authorize a project found to have an adverse effect unless he finds, in writing, after full and complete review, that "no feasible and prudent alternative exists and that all possible steps have been taken to minimize such adverse effect."
- k. Sections 16(d) and (e) of the Airport Act require, as a condition to approval of certain airport projects, that (1) an opportunity be afforded for a public hearing for consideration of economic, social, and environmental effects; and (2) assurances be obtained that the project will be located, designed, constructed, and operated so as to comply with applicable air and water quality standards.
- 1. Section 18(4) of the Airport Act requires that assurances be obtained that "appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft."
- m. Section 109(1) of the Highway Act requires the Secretary to develop and promulgate standards for highway noise levels compatible with different land uses and prohibits the approval of plans and specifications for certain projects unless he determines that the plans and specifications include adequate measures to implement the standards.

- n. Section 109(j) of the Highway Act requires the Secretary, in consultation with the Environmental Protection Agency (hereinafter "EPA"), to develop and promulgate guidelines to assure that highways constructed under the Act "are consistent with any approved plan for the implementation of any ambient air quality standard for any air quality control region designated pursuant to the Clean Air Act, as amended."
- o. Section 309 of the Clean Air Act requires the Administrator of EPA to "review and comment in writing on the environmental impact of any matter relating to duties and responsibilities granted pursuant to this Act or other provisions of the authority of the Administrator, contained in any (1) legislation proposed by any Federal department or agency, (2) newly authorized Federal projects for construction and any major Federal agency action (other than a project for construction) to which Section 102(2)(C) of P.L. 91-190 applies, and (3) proposed regulations published by any department or agency of the Federal Government."
- p. Section 14 of the Mass Transportation Act requires the Secretary to review each transcript of the public hearing conducted in connection with a project "to assure that an adequate opportunity was afforded for the presentation of views by all parties with a significant economic, social, or environmental interest, and that the project application includes a detailed statement on (1) the environmental impact of the proposed project, (2) any adverse environmental effects which cannot be avoided should the proposal be implemented, (3) alternatives to the proposed project, and (4) any irreversible and irretrievable impact on the environment which may be involved in the proposed project should it be implemented." The Secretary may not approve an application under Section 3 of the Act unless he finds that "(1) adequate opportunity was afforded for the presentation of views ... and fair consideration has been given to the preservation and enhancement of the environment and to the interest of the community in which the project is located, and (2) either no adverse environmental effect is likely to result from such project, or there exists no feasible and prudent alternative to such effect and all reasonable steps have been taken to minimize such effect."

- q. Section 106 of the National Historic Preservation Act requires the head of any Federal agency having jurisdiction over a Federal or federally-assisted undertaking to take into account, prior to approving the undertaking, its effect on any district, site, building, structure, or object that is included in the National Register of Historic Places, and to give the Advisory Council on Historic Preservation a reasonable opportunity to comment with regard to the undertaking.
- r. Executive Order 11593, Protection and Enhancement of the Cultural Environment, requires that Federal plans and programs contribute to the preservation and enhancement of sites, structures, and objects of historical, architectural, or archaeological significance.
- s. 36 CFR Part 800 (39 FR 3365, January 25, 1974) Procedures for the Protection of Historic and Cultural Properties, establishes procedures to ensure that historic and cultural resources are given proper consideration in the preparation of environmental impact statements.
- t. Executive Order 11296, Flood Hazard Evaluation Guidelines, requires Federal agencies to evaluate flood hazards in planning facilities, constructing buildings and facilities, disposing of lands and properties, and land use planning.
- u. The Coastal Zone Management Act of 1972 states that "... it is the national policy (a) to preserve, protect, develop, and where possible, to restore or enhance, the resources of the Nation's coastal zone..." (section 303); and requires all Federal activities affecting the zone to be carried out in a manner consistent with State coastal zone management programs (section 307).
- v. Section 2 of the Water Bank Act (P.L. 91-559) declares that "... it is in the public interest to preserve, restore, and improve the wetlands of the Nation...."
- w. Section 2 of the Fish and Wildlife Coordination Act requires, with certain limited exceptions, that "whenever the waters of any stream or other body of water are proposed or authorized to be ... controlled or modified for any purpose whatever ... by any department or agency of the

United States, or by any public or private agency under Federal permit or license, such department or agency shall first consult with the United States Fish and Wildlife Service, Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State wherein the ... control facility is to be constructed...." (subsection (a)). Reports and recommendations of the Secretary of the Interior and any other applicable officials must be included in the report prepared or submitted by the agency responsible for constructing the project to the Congress or other agency with authority to approve the project (subsection (b)).

3. DEFINITIONS AND ACTIONS COVERED.

- a. Definitional Guidelines. Section 102(2)(C) of NEPA requires preparation of an environmental impact statement (hereinafter "environmental statement" or "statement") for every major recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. Definitional guidelines for "major action significantly affecting" are set forth in Attachment 1.
- b. Actions Covered. Except as provided in subparagraph c. below, the requirements in this Order calling for either a negative declaration (see paragraph 7.g.) or a statement pursuant to Section 102(2)(C) of NEPA apply to, but are not limited to, the following: all grants, loans, contracts, purchases, leases, construction, research activities, rulemaking and regulatory actions, certifications, licensing, permits, plans submitted to the Department by State or local agencies which require Departmental approval, legislation proposed by DOT or legislation proposed by others and supported by DOT and for the subject matter of which DOT would have primary responsibility, and any renewals or reapprovals of the foregoing.
- c. Exceptions.
 - (1) Assistance in the form of general revenue sharing with no Departmental control over the subsequent use of the funds;

- (2) Administrative procurements (e.g., general supplies) and contracts for personal services;
 - (3) Normal personnel actions (e.g., promotions, hirings);
 - (4) Planning grants which do not imply a project commitment;
 - (5) Project amendments (e.g., increases in costs) which do not alter the environmental impact of the action;
 - (6) Legislative proposals not originating in DOT and relating to matters not the primary responsibility of DOT; and
 - (7) In addition to the exceptions noted in subparagraphs (1) - (6) above, the implementing instructions called for by paragraph 4 below may provide for exceptions on specific types or categories of actions carried out by the operating administrations which are not major Federal actions significantly affecting the quality of the human environment.
- d. Class Action. A general class of actions may be covered by a single statement when the environmental impacts of all the actions (and alternatives thereto) are substantially similar.
- e. Research. Guidelines for assessing the environmental consequences of research activities are set forth in Attachment 3.

4. IMPLEMENTING INSTRUCTIONS.

- a. Administrations shall issue instructions or regulations implementing this Order. The implementing instructions, and any substantial amendments thereto, shall be submitted to TES for review, consultation with CEQ, and concurrence by TES and TGC. In order to ensure reasonable consistency in the treatment of research and development, the Assistant Secretary for Systems Development and Technology (TST) will prepare, with the concurrence of the separate operating administrations, that part of the operating administrations' implementing instructions dealing with

interpretation of the guidelines in Attachment 3. After concurrence by TES and TGC, administrations shall publish the proposed implementing instructions or modifications in the Federal Register, allowing a minimum of 45 days for public comment and compliance with the applicable requirements of the Administrative Procedure Act (5 U.S.C. 551 et seq.) and OMB Circular No. A-85, "Consultation with Heads of State and Local Governments in Development of Federal Rules, Regulations, Standards, Procedures, and Guidelines." With the concurrence of TES and TGC, final procedures shall then be published. The administrations shall apply this Order and the CEQ guidelines to their programs, even though implementing instructions have not yet been finally promulgated pursuant to this paragraph.

- b. The implementing instructions shall incorporate the main points in this Order (or include it as an attachment), and apply them with more specificity to the programs of the operating administrations. They shall define "programs", "projects", and "actions" for purposes of 102(2)(C) statements, and prescribe the time and requirements for consultation prior to decision, and the other decision review processes for which environmental statements are to be available.

5. CITIZEN INVOLVEMENT PROCEDURES.

- a. Citizen involvement in the environmental assessment of Departmental actions is encouraged at each appropriate stage of development of the proposed action and should be sought as early as possible. Attempts to solicit the views of the public through hearings, personal contact, press releases, advertisements or notices in newspapers, maintaining mailing lists of interested parties, and other methods should be utilized. Administrations should develop lists of interested parties at the national, State, and local levels. These would include individuals and community, environmental, conservation, public service, education, labor, or business organizations, who are affected by or known to have an interest in the project, or who can speak knowledgeably on the environmental impact of the proposed action. A summary of citizen involvement and any environmental issues raised should be documented in the environmental statement. Planning

stage criteria for citizen involvement and identification of social, economic, and environmental impacts in Departmental planning programs are set forth in DOT 1130.2, "Annual Unified Work Programs for Intermodal Planning," dated March 16, 1973.

- b. The administrations' implementing instructions shall prescribe procedures assuring (1) that interested parties and Federal, State, and local agencies receive early notification of the decision to prepare an environmental impact statement, and (2) that their comments on the environmental effects of the proposed Federal action are solicited at an early stage in the preparation of the draft impact statement.
- c. Under OMB Circular A-95, "Evaluation, Review, and Coordination of Federal Assistance Programs and Projects," and DOT 4600.4B, "Evaluation, Review and Coordination of DOT Assistance Programs and Projects," dated February 27, 1974, a grant applicant must notify the clearinghouse of its intention to apply for Federal program assistance. The notification must solicit comments on the project and its impacts from appropriate State and local agencies. The early notification requirement may be met for this type of proposed action by requiring that the notification be sent to interested parties and agencies at the same time it is sent to the clearinghouse.
- d. At the time the draft environmental impact statement is circulated to Federal, State, and local agencies, copies should be sent to known interested parties, and the availability of the statement should be made generally known through advertisements in local papers or any other effective method. (See also paragraph 9.f. regarding availability of statements.)
- e. Hearings.
 - (1) In several instances, a public hearing is required by statute as a condition to Federal approval of a proposed project. Even where not required by statute, a hearing may help resolve environmental conflicts. In deciding whether a public hearing is appropriate, officials should consider:

- (a) The magnitude of the proposal in terms of economic costs, environmental impact, the geographic area involved, and the uniqueness or amount of the resources to be committed;
 - (b) The degree of interest in the proposal as evidenced by requests for a hearing from the public or Federal, State, and local authorities;
 - (c) The complexity of the issue and the likelihood that the information presented at the hearing will be of assistance to the agency in fulfilling its responsibilities under NEPA and other applicable laws; and
 - (d) The extent to which public involvement already has been achieved through other means, such as earlier public hearings, meetings with citizen representatives, or written comments on the proposed action.
- (2) If a public hearing is to be held, the draft statement or environmental analysis should be made available to the public at least 30 days prior to the hearing. The notice of the hearing should be announced through newspaper articles, direct notification to interested parties and clearinghouses, or other means, and should note the availability of the environmental impact statements or analyses.
- f. Each administration and Secretarial Office shall maintain a list of its actions for which environmental statements are being prepared and make the list available to the public upon request. Each administration and Secretarial Office shall submit a current list of these statements to TES and CEQ not less than quarterly, and make it available to the public upon request.
6. PLANNING STAGE. The environmental impacts of proposed activities should be initially assessed concurrently with the initial technical and economic studies. General criteria for identification of social, economic, and environmental impacts in Department planning programs are set forth in DOT 1130.2, "Annual Unified Work Programs for Intermodal Planning," dated March 16, 1973.

7. PREPARATION OF DRAFT ENVIRONMENTAL STATEMENT.

- a. Form and Content. The environmental statement shall include relevant environmental determinations under Section 4(f) of the DOT Act, Section 16(c)(4) of the Airport Act, and Section 14 of the Mass Transportation Act, and the documentation for other environmental findings, determinations, and clearances within the scope of this Order. Guidelines for the form and content of environmental statements are set forth in Attachment 2.
- b. Legislative Proposals. Before the Department submits to the Congress a legislative proposal or a favorable report on proposed legislation involving matters for which it is primarily responsible, the office which develops the Departmental position on the report or originates the legislation shall, in accordance with OMB Bulletin 72-6, "Proposed Federal Actions Affecting the Environment", prepare, circulate, and file with CEQ an environmental statement or prepare a negative declaration.
- c. Timing of Preparation of Draft Statements. Draft statements shall be prepared at the earliest practical time prior to the first significant point of decision in the program or project development process. They should be prepared early enough in the process so that the analysis of the environmental effects and the exploration of alternatives with respect thereto are significant inputs to the decision making process. The implementing instructions (called for by paragraph 4 above) shall specify the point at which draft statements should be prepared for each type of action to which the instructions apply.
- d. Actions Originating Within DOT. If a proposed action to which this Order applies originates within DOT, the originator of the proposal shall state in the proposal whether, in his judgement, the action will require a 102(2)(C) statement. If the action originates within the Office of the Secretary, the originator of the proposal is responsible for preparing (with the assistance and concurrence of TES), circulating, and filing with CEQ, the environmental statement. The originator of the proposal is also responsible for preparing a negative declaration where appropriate.

- e. Applications. Each applicant for a grant, loan, permit, or other DOT approval covered by paragraph 3 above may be requested to submit, with the original application, a proposed draft 102(2)(C) statement, a negative declaration, or, if the draft statement or negative declaration is to be prepared by the administration, an environmental analysis of the proposed project. In the latter event, the administration should assist the applicant by specifying the types of information required.
 - (1) Regardless of the nature of the applicant's participation, the administration must make its own evaluation of the environmental issues because it is responsible for the scope and content of draft and final environmental statements.
 - (2) The implementing instructions shall limit the actions an applicant may take prior to completion and review of the final statement and approval of the application.
- f. Use of Consultants. Consultants may prepare background or preliminary material and assist in preparing a draft or final environmental statement for which the Department takes responsibility. Care should be exercised in selecting consultants, and in reviewing their work, to insure complete and objective consideration of all relevant project impacts and alternatives, particularly if the consultant may expect further contracts based on the outcome of the environmental decision.
- g. Negative Declaration. There shall be prepared for any proposed action to which this Order applies either a statement as required by Section 102(2)(C) of NEPA, or a declaration that the proposed action will not have a significant impact on the environment.
 - (1) A negative declaration need not be coordinated outside the originating office, but must be made available to the public upon request.
 - (2) A negative declaration must include documentation sufficient to support the determination that the proposed action does not have a significant impact on the environment.

- (3) An operating administration or Secretarial Office shall carefully document a negative declaration covering a proposed action (a) which has been identified as normally requiring preparation of a statement; (b) which is similar to another action for which a statement has been prepared; (c) which has been previously announced to be the subject of a statement; or (d) which is prepared in response to a request from CEQ. Lists of declarations in these categories, and any determinations that preparation of a statement is not yet timely, shall be prepared and made available in the same manner as provided in paragraph 5.f. for lists of statements under preparation.
- h. Scope of Statement. The action covered by the statement should have independent significance, and must be broad enough in scope to avoid segmentation of projects and to insure meaningful consideration of alternatives. In certain circumstances, statements will be required for broad programs in order to assess the environmental effects of a number of actions in a geographical area, the environmental impacts that are generic or common to a series of actions, or the overall impact of a chain of contemplated projects.
- i. Interdisciplinary Approach. Section 102(2)(A) of NEPA requires each Federal agency to utilize a "systematic, interdisciplinary approach" to plans and programs affecting the environment. To assure that all environmental impacts are identified and assessed, all relevant disciplines should be represented. If the necessary disciplines are not represented on the staff of the applicant or the administration, it is appropriate to use professional services available in other Federal, State or local agencies, universities, or consulting firms. The use of the interdisciplinary approach should not be limited to the environmental statement. This approach should also be used in the early planning stages to help assure a systematic evaluation of reasonable alternative courses of action and their potential social, economic, and environmental consequences.

j. Lead Agency. CEQ guidelines provide that:

"Where more than one agency (1) directly sponsors an action, or is directly involved in an action through funding, licenses, or permits, or (2) is involved in a group of actions directly related to each other because of functional interdependence and geographic proximity, to the maximum extent possible one statement should be prepared for all Federal actions involved. Agencies in such cases should consider the possibility of joint preparation of a statement by all agencies concerned, or designation of a single 'lead agency' to assume supervisory responsibility for preparation of the statement. Where a lead agency prepares the statement, the other agencies involved should provide assistance with respect to their areas of jurisdiction and expertise. In either case, the statement should contain an environmental assessment of the full range of Federal actions involved, should reflect the views of all participating agencies, and should be prepared before major or irreversible actions have been taken by any of the participating agencies. Factors relevant in determining an appropriate lead agency include the time sequence in which the agencies become involved, the magnitude of their respective involvement, and their relative expertise with respect to the project's environmental effects. As necessary, the Council on Environmental Quality will assist in resolving questions of responsibility for statement preparation in the case of multi-agency actions. Federal Regional Councils, agencies, and the public are encouraged to bring to the attention of the Council and other relevant agencies appropriate situations which a geographic or regionally focused statement would be desirable because of cumulative effects likely to result from multi-agency actions in the area."

Questions concerning "lead agency" decisions should be raised with CEQ through TES. For projects serving and primarily involving land owned by or under the jurisdiction of another Federal agency, that agency may be the appropriate lead agency.

8. PROCESSING OF DRAFT ENVIRONMENTAL STATEMENT. The originating operating administration or Secretarial Office shall circulate the draft environmental statement for comment to (1) all agencies having jurisdiction by law or special expertise with respect to the environmental impact involved; (2) interested parties (see subparagraph 5.a.); (3) CEQ (five copies); (4) TES (two copies); and (5) other elements of DOT where appropriate. If the Federal Highway Administration takes responsibility for the form and content of the statement and clears it, a statement may be circulated by a State highway department. Implementing instructions shall set forth the procedure for obtaining comments. A time period for comment may not be less than 45 days from the Friday of the week following receipt of the draft impact statement by CEQ. Requests for extensions of time shall be granted whenever possible, and particularly when warranted by the magnitude and complexity of the statement or the extent of citizen interest.
- a. Federal Review. Attachment 4 of this Order lists the Federal agencies having special expertise or jurisdiction by law with respect to environmental impacts to which the draft statement should be referred, as appropriate, for comment.
- b. State and Local Review.
- (1) Review of the proposed action by State and local agencies, when appropriate, shall be obtained as follows:
- (a) Where review of direct Federal development projects, and of projects assisted under programs listed in Attachment D to revised OMB Circular A-95 (as implemented by DOT 4600.4B, "Evaluation, Review and Coordination of DOT Assistance Programs and Projects", dated February 27, 1974), takes place prior to preparation of an environmental statement, comments of the reviewing agencies on the environmental effects of the proposed project are inputs to the environmental statement. These comments shall be attached to the draft

statement when it is circulated for review and copies of the draft shall be sent to those that commented. A-95 clearinghouses or other agencies designated by the Governor may also secure comments on environmental statements. In all cases, copies of the draft and final environmental statements shall be sent to clearinghouses and to the applicant whose project is the subject of the statement.

- (b) Project applicants or administrations shall obtain comments directly from appropriate State and local agencies, except where review is secured by agreement through A-95 clearinghouses. Comments shall be solicited from municipalities and counties on all projects located therein.
 - (c) State and local review of each administration's procedures, regulations, and policies for administering Federal programs of assistance to State and local governments shall be obtained pursuant to procedures established by OMB Circular No. A-85.
- (2) Generally, environmental statements on legislative and budget proposals need not be subject to State and local review.
- c. Utilization of Comments. Comments received on the draft statement, and inputs (in summary form, if appropriate) from the processes for citizen participation, shall accompany the draft environmental statement through the normal internal project or program review process.
 - d. Legislation. The draft of the environmental statement for proposed legislation or legislative report shall be cleared with TES and submitted by TGC-40 to the Office of Management and Budget for circulation in the normal legislative clearance process. The statement, and any comments received, shall be furnished to the Congress and made available to the public for consideration in connection with the proposed legislation or report. If the scheduling of congressional hearings on legislation does not allow adequate time for the completion of a final environmental statement, a draft

environmental statement shall be furnished to the Congress and made available to the public pending transmittal of the comments as received and the final text. Negative declarations shall be forwarded to the Congress, if requested.

9. FINAL ENVIRONMENTAL IMPACT STATEMENT: PREPARATION, PROCEDURES, AND RESPONSIBILITIES.

- a. Preparation. Before being put into final form for approval of the responsible official, draft statements shall be revised, as appropriate, to reflect comments received, issues raised through the community involvement and public hearing process, or other considerations. Final statements shall conform to the guidelines for form and content in Attachment 2.
- b. Legal Review. All final environmental statements shall be reviewed for legal sufficiency by the Chief Counsel of the operating administration concerned, or his designee. Statements that also fall under Section 4(f) of the DOT Act shall be reviewed for legal sufficiency by counsel at the headquarters of the operating administration.
- c. Internal Processing. Final environmental impact statements will be processed pursuant to this subparagraph.
 - (1) Grants for Highway Construction Projects. Final environmental impact statements for all grants for highway construction projects may be approved by the Federal Highway Administrator or his designee. For projects in the following categories, that approval may be given only after concurrence of TES:
 - (a) Any highway project located on a new alignment in an urban area of over 100,000 population ("urban area" is defined as an area within the boundaries of a comprehensive urban planning area, as defined in paragraph 3.b.(2) of FHWA Policy and Procedure Memorandum 50-9, included in Federal-Aid Highway Program Manual, volume 4, chapter 4, section 2);
 - (b) Any new controlled access freeway;

- (c) Any project to which a Federal, State, or local governmental agency has expressed opposition on environmental grounds;
- (d) Any project for which TES requests an opportunity to review and concur in the final statement;
- (e) Any project for which the Federal Highway Administrator requests review and concurrence by TES in the final statement.

For those highway construction project grants in categories (a) through (e) above that also fall under Section 4(f) of the DOT Act, concurrence from both TGC and TES is required prior to approval of the final environmental impact statement/Section 4(f) determination by the Administrator or his designee.

- (2) Grants for Airport Development Projects. Final environmental impact statements for all airport development grants may be approved by the Federal Aviation Administrator or his designee. For projects in the following categories, that approval may be given only after concurrence of TES:
 - (a) Any new airport serving a metropolitan area;
 - (b) Any new runway or runway extension for an airport located in whole or in part within a metropolitan area and either certificated under Section 612 of the Federal Aviation Act of 1958, as amended, or used by large aircraft (except helicopters) of commercial operators;
 - (c) Any project to which a Federal, State, or local governmental agency has expressed opposition on environmental grounds;
 - (d) Any project for which TES requests an opportunity to review and concur in the final statement;

- (e) Any project for which the Federal Aviation Administrator requests review and concurrence by TES in the final statement.

For those airport grants in categories (a) through (e) above that also fall under Section 4(f) of the DOT Act, concurrence from both TGC and TES is required prior to approval of the final environmental impact statement/Section 4(f) determination by the Administrator or his designee.

- (3) Bridge Permits. Final environmental impact statements for all bridge permits issued under Section 9 of the Act of March 3, 1899, 33 U.S.C. 401; the Bridge Act of 1906, as amended, 33 U.S.C. 491 et seq.; or the General Bridge Act of 1946, as amended, 33 U.S.C. 525 et seq.; may be approved by the Commandant of the Coast Guard or his designee. For bridge permits in the following categories, that approval may be given only after concurrence of TES:

- (a) Any bridge that would be part of a road located on a new alignment in an urban area (as defined in paragraph 9.c.(1)(a));
- (b) Any bridge that would be part of a new controlled access freeway;
- (c) Any bridge to which a Federal, State, or local governmental agency has expressed opposition on environmental grounds;
- (d) Any bridge for which TES requests an opportunity to review and concur in the final statement;
- (e) Any bridge for which the Commandant of the Coast Guard requests review and concurrence by TES in the final statement.

For those Coast Guard projects in categories (a) through (e) above that also fall under Section 4(f) of the DOT Act, concurrence from both TGC and TES is required prior to approval of the final environmental impact statement/Section 4(f) determination by the Commandant or his designee.

- (4) Other Final Environmental Impact Statements. Final environmental impact statements with respect to actions not dealt with in subparagraphs (1) through (3) above may be approved by the Administrator or Secretarial Officer originating the action, but only after concurrence of TES.
- (5) Copies and Notification. Where TES concurrence is required, the administrations shall submit to TES two copies of the final environmental statement, together with all comments received on the draft from the responsible Federal, State, and local agencies and private organizations. The final statement may be deemed to be concurred in by TES unless, within two weeks after its receipt, TES notifies the administration to the contrary, or unless it is an item requiring concurrence by other Secretarial Officers. With respect to the latter items, TES shall transmit the coordinated decisions of the appropriate Secretarial Offices to the originating administration or office. A final statement requiring TES concurrence may not be formally transmitted to CEQ until that concurrence has been secured. When TES does not concur, the final statement shall be returned to the originating administration or office with a statement of the reasons for non-concurrence.
- d. Availability Pending Approval. Proposed final statements may be made available to the public and Federal, State, or local agencies pending final approval and filing with CEQ, if they carry a notation that the statement is not approved and filed.
- e. Decisions Reserved to the Secretary. If an action requires the personal approval of the Secretary or Under Secretary pursuant to a request by them or by TES, TGC, or the administration or Secretarial Office originating the action, the final environmental statement shall be accompanied by a brief cover memorandum requesting the Secretary's or Under Secretary's approval of the action.
 - (1) The memorandum shall have signature lines for the concurrence of the Assistant Secretary for Environment, Safety, and Consumer Affairs, the General Counsel, and the Under Secretary, and for the approval of the Secretary or Under Secretary.

- (2) TES, in conjunction with the Executive Secretary, is responsible for informing the Assistant Secretary for Congressional and Intergovernmental Affairs and the Office of Public Affairs of the Secretary's decisions so that they, in coordination with the operating administrations or other Secretarial Offices involved, may take the appropriate actions.
- f. Availability of Statements to the President, the CEQ, and the Public. After approval, the originating office shall transmit five copies of each final statement to CEQ, which transmittal shall be deemed a transmittal to the President.
- (1) The office preparing the environmental statement shall make the draft and final versions of the statement, and the comments received thereon, available to the public, pursuant to the provisions of the Freedom of Information Act (5 U.S.C. Section 552), at the headquarters and appropriate regional offices of the administration, and at appropriate State, regional, and metropolitan clearinghouses unless the Governor of the State involved designates some other point for receipt of this information. Notice of that designation is included in an OMB listing of clearinghouses.
- (2) In accordance with the policy set forth in 49 CFR 7.87(c), it is hereby determined that waiver or reduction of the fee for copying statements is in the public interest because furnishing the information can be considered as primarily benefiting the general public. Accordingly, materials to be made available to the public shall be provided without charge to the fullest extent practical, or at a reduced charge which is not more than the actual cost of reproducing copies.
- (3) Draft and final statements shall be made available in public places such as local public libraries, the offices of the administration or Secretarial Office preparing the statement, and the offices of the applicant and grantee.

- (4) A copy of the final statement, with comments attached, should be sent, at the same time it is sent to CEQ, to the applicant whose project is the subject of the statement, to appropriate offices of EPA, to all Federal, State, and local agencies and private organizations who commented substantively on the draft statement or requested copies of the final statement, and to individuals who requested copies. If the length of the statement or the number of comments make this distribution requirement highly impractical, TES shall consider an alternative arrangement, in consultation with CEQ.

- g. Timing of Decision. Action to implement a proposed action (other than proposals for legislation to Congress, budget proposals, or reports on legislation) for which an environmental statement is required may not be taken sooner than 90 days after a draft environmental statement has been circulated for comment, and furnished to CEQ, or sooner than 30 days after the final environmental statement has been filed with CEQ and made available to commenting agencies and the public. Exceptions to these time periods may be made for emergency procurement or when advance public disclosure will result in significant added costs of procurement to the Government. If the final text of an environmental statement is filed within 90 days after a draft statement has been circulated for comment, furnished to the CEQ and made public pursuant to this section of these guidelines, the 30-day period and 90-day period may run concurrently.
- h. Supplemental or Amended Statements. Departmental officials may supplement or amend a draft or final environmental statement. When substantial changes are made in a proposed action, or where significant new information regarding its environmental impacts comes to light, the operating administration should secure the concurrence of TES as required under subparagraph 9.c. In any case the operating administration should consult with CEQ, through TES, with respect to the need for, or desirability of, recirculating the statement for the appropriate period.

10. DETERMINATIONS UNDER SECTION 4(f) OF THE DOT ACT.

- a. As indicated in Attachment 1, subparagraph 2.a.(1), any action falling under the provisions of Section 4(f) of

the DOT Act will normally require the preparation of an environmental statement. In these cases, the statement shall include the material required by paragraph 4 of Attachment 2.

- b. If an environmental statement is not required, the material called for by paragraph 4 of Attachment 2 shall be set forth in a separate document, accompanied by a negative declaration. The Section 4(f) determination shall be reviewed for legal sufficiency by the Chief Counsel of the operating administration involved, or by his designee. The document must reflect consultation with the Department of the Interior and, where appropriate, the Departments of Agriculture or Housing and Urban Development.

11. IMPLEMENTATION OF REPRESENTATIONS IN ENVIRONMENTAL STATEMENTS.

The administrations shall assure, through funding agreements and project review procedures, that applicants carry out any actions to minimize adverse environmental effects set forth in the approved statement. Any proposed deviation from prescribed action that may reduce protection to the environment must be submitted to TES for concurrence, if the approved statement was concurred in by TES.

12. REQUESTS FROM THE COUNCIL ON ENVIRONMENTAL QUALITY. CEQ, in fulfilling its responsibilities under NEPA and Executive Order 11514, may request reports and other information dealing with issues arising in connection with the implementation of NEPA. Administrations and Secretarial Offices shall make every reasonable effort to be responsive to requests by CEQ for either the preparation or circulation of environmental statements, unless it is determined that an environmental statement is not required. In that event, an environmental assessment should be prepared briefly setting forth the reasons for that determination, and that assessment should be available to the public.

13. APPLICATION OF SECTION 102(2)(C) PROCEDURE TO EXISTING PROJECTS AND PROGRAMS. The Section 102(2)(C) procedure applies to major Federal actions having a significant

effect on the environment even though they arise from projects or programs initiated prior to enactment of NEPA on January 1, 1970. In assessing the environmental effect of proceeding with such a project, and in evaluating alternatives, consideration shall be given to the status of work and degree of completion. If the project or program is continued, it must, to the extent feasible, be shaped so as to enhance and restore environmental quality, avoid or minimize adverse environmental consequences, and take into account environmental consequences not fully evaluated at the outset of the project or program.

14. REVIEW OF ENVIRONMENTAL STATEMENTS PREPARED BY OTHER AGENCIES. Other agencies may consult with the Department in preparing environmental statements. The purpose of DOT review and comment on environmental statements drafted by other agencies is to provide constructive assistance and expertise on the environmental impact of the proposal on areas within this Department's functional area of responsibility or special expertise. Accordingly, the responsibility of the Departmental official commenting is limited generally to providing a competent and cooperative advisory and consultative service.
- a. Comments should be organized in a manner consistent with the structure of the draft statement and should identify alternatives or modifications that may enhance environmental quality or avoid or minimize adverse environmental impacts.
 - b. DOT projects that are environmentally related to the proposed action should be identified so interrelationships may be discussed in the final statement.
 - c. Environmental monitoring for which DOT has special expertise may be suggested and encouraged during construction, startup, or operation phases.
 - d. Other agencies may consult with DOT operating administrations and be requested to forward the draft environmental statements directly to the appropriate regional offices of the operating administrations. There are several types of matters, however, that should be referred to Departmental headquarters for comment. These generally include the following:

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- (1) Actions with national policy implications;
- (2) Projects that involve natural, ecological, cultural, scenic, historic, or park or recreation resources of national significance;
- (3) Legislation, regulations having national impacts, or national program proposals;
- (4) Projects affecting the transportation of hazardous materials, or natural gas and liquid-products pipelines; and
- (5) Water resource projects.

Water resource projects are to be referred to the Water Resources Coordinator, U.S. Coast Guard (G-WS). All other items are to be referred to TES and, where appropriate, to the headquarters of the operating administrations. In referring these matters to headquarters, the regional office is encouraged to prepare a proposed Departmental response.

- f. Comments on draft environmental statements that do not have national implications should be prepared by the regional offices of DOT and forwarded directly to the regional or area office of the originating agency. If the receiving office believes that another DOT office also has an interest, or is in a better position to respond, it should transmit the statement to the other office. If more than one administration is commenting at the regional level, the comments shall be coordinated by the Secretarial Representative or his designee.
- g. When appropriate, the commenting office should coordinate a response with Departmental offices having special expertise in the subject matter.
- h. Comments shall be submitted within the time limits set forth in the request, unless the office responsible for submitting comments seeks an extension of time. Comments should be concise, and specify any changes desired either in the action proposed or in the environmental statement, or both. A lengthy analysis should be preceded by a summary of the principal areas of comment, the conclusions, and the recommendations, if any.

1. Comments shall be distributed as follows: the original and one copy to the requesting agency; one copy to TES-70; five copies to CEQ; one copy to the Secretarial Representative if the comment is prepared by a regional office. Requests by the public for copies should be referred to the agency originating the statement.

15. APPLICABILITY.

- a. Except as provided in subparagraph c. below, this Order and Attachments 1 and 3-5 apply to all draft and final statements filed by DOT with CEQ after September 30, 1974.
- b. Except as provided in subparagraph c. below, Attachment 2 applies to all draft and final statements filed by DOT with CEQ on and after November 29, 1974. Paragraphs 8.o. and 9.c.-f. of DOT Order 5610.1A apply to all statements filed before that date.
- c. This Order and attachments do not apply to final statements submitted to the Office of the Secretary for concurrence before September 30, 1974. DOT Order 5610.1A continues to apply to them.



Claude S. Brinegar
Secretary of Transportation

DEFINITIONAL GUIDELINES

1. General. Where the environmental consequences of a proposed action are unclear but potentially significant, a statement should be prepared. It should be noted that the effects of many Federal decisions, including related Federal actions and projects in the area, can be individually limited but cumulatively considerable. This can occur when one or more offices over a period of years put into a project individually minor, but collectively major, resources; when one decision involving a limited amount of money is a precedent for action in much larger cases or represents a decision in principle about a future major course of action; or when several Government agencies individually make decisions about partial aspects of a major action. In all such cases, an environmental statement should be prepared if it is reasonable to anticipate a cumulatively significant impact on the environment from Federal action. Moreover, NEPA is not limited to adverse environmental effects; any significant effect, positive or negative, requires a statement. CEQ, on the basis of a written assessment of the impacts involved, is available to assist in determining whether specific actions require impact statements.
2. "Major Federal Action Significantly Affecting" Environment.
 - a. Any of the following actions should ordinarily be considered as major Federal actions significantly affecting the quality of the human environment:
 - (1) Any effect that is not minimal on properties protected under Section 4(f) of the DOT Act or Section 106 of the Historic Preservation Act.
 - (2) Any action that is likely to be highly controversial on environmental grounds.
 - (3) Any action that is likely to have a significantly adverse impact on natural, ecological, cultural, or scenic resources of national, State, or local significance.
 - (4) Any action that is likely to be highly controversial with respect to the availability of adequate relocation housing.

- (5) Any action which (a) causes a significant division or disruption of an established community or disrupts orderly, planned development or is determined to be significantly inconsistent with plans or goals that have been adopted by the community in which the project is located; or (b) causes a significant increase in congestion.
 - (6) Any action which (a) is determined to be inconsistent with any Federal, State, or local law or administrative determination relating to the environment; (b) has a significant detrimental impact on air or water quality or on ambient noise levels for adjoining areas; or (c) may contaminate a public water supply system.
 - (7) Other action that directly or indirectly significantly affects human beings by creating an adverse impact on the environment.
- b. Administrations shall review the typical classes of actions that they undertake and, in consultation with TES, develop specific criteria and methods of identifying those actions likely to require environmental statements. CEQ suggests that this involve:
- (1) Making an initial assessment of the environmental impacts typically associated with principal types of actions.
 - (2) Identifying on the basis of this assessment types of actions which normally do, and types of actions which normally do not, require statements.
 - (3) With respect to remaining actions that may require statements depending on the circumstances, and those actions determined under the preceding paragraph (2) as likely to require statements, identifying:
 - (a) what basic information needs to be gathered;
 - (b) how and when such information is to be assembled and analyzed; and (c) on what basis environmental assessments and decisions to prepare impact statements will be made.

FORM AND CONTENT OF STATEMENT

1. Form

- a. Each statement will be headed as follows:

Department of Transportation

(operating administration)

(Draft) Environmental Impact Statement
Pursuant to Section 102(2)(C), P.L. 91-190

- b. The heading specified in paragraph a. above shall be modified to indicate that the statement also covers Section 4(f), Section 14, Section 106 and/or Sections 16 and 18(4) requirements, as appropriate.
- c. Each statement will, as a minimum, contain sections corresponding to paragraph 3 herein, supplemented as necessary to cover other matters provided in Attachment 2.
- d. The format for the summary to accompany draft and final environmental statements is as follows:

SUMMARY

(Check one) () Draft () Final

Department of Transportation (with name of operating administration where appropriate). Name, address, and telephone number of individual who can be contacted for additional information about the proposed action or the statement.

- (1) Name of Action. (Check one) () Administrative Action. () Legislative Action.

- (2) Brief description of action indicating what States (and counties) are particularly affected.
 - (3) Summary of environmental impact and adverse environmental effects.
 - (4) List alternatives considered.
 - (5) (a) (For draft statements) List all Federal, State, and local agencies from which comments have been requested.

(b) (For final statements) List all Federal, State, and local agencies and other sources from which written comments have been received.
 - (6) Dates the draft statement and the final statement if issued were made available to the Council on Environmental Quality and the public.
2. Guidance as to Content of Statements. The following paragraphs of Attachment 2 are intended to be considered, where relevant, as guidance regarding the content of environmental statements. This guidance is expected to be supplemented by research reports, guidance on methodology, and other material from the literature as may be pertinent to evaluation of relevant environmental factors.
3. General Content. The following points are to be covered:
- a. A description of the proposed Federal action (e.g., "The proposed Federal action is approval of location of highway ..." or "The proposed Federal action is approval of a grant application to construct ..."), a statement of its purpose, and a description of the environment affected, including information, summary technical data, and maps and diagrams where relevant, adequate to permit an assessment of potential environmental impact by commenting offices and the public.
 - (1) Highly technical and specialized analyses and data should generally be avoided in the body of the draft impact statement. Such materials should be appropriately summarized in the body of the environmental statement and attached as

appendices or footnoted with adequate bibliographic references.

- (2) The statement should succinctly describe the environment of the area affected as it exists prior to a proposed action, including other related Federal activities in the area, their interrelationships, and cumulative environmental impact. The amount of detail provided in such descriptions should be commensurate with the extent and expected impact of the action, and with the amount of information required at the particular level of decision making (planning, feasibility, design, etc.). In order to insure accurate descriptions and environmental assessments, site visits should be made where appropriate.
 - (3) The statement should identify, as appropriate, population and growth characteristics of the affected area and any population and growth assumptions used to justify the project or program or to determine secondary population and growth impacts resulting from the proposed action and its alternatives (see paragraph 3c(2)). In discussing these population aspects, the statement should give consideration to using the rates of growth in the region of the project contained in the projection compiled for the Water Resources Council by the Bureau of Economic Analysis of the Department of Commerce and the Economic Research Service of the Department of Agriculture (the OBERS projection).
 - (4) The sources of data used to identify, quantify, or evaluate any or all environmental consequences must be expressly noted.
- b. The relationship of the proposed action and how it may conform to or conflict with adopted or proposed land use plans, policies, controls, and goals and objectives as have been promulgated by affected communities. Where a conflict or inconsistency exists, the statement should describe the extent of reconciliation and the reasons for proceeding notwithstanding the absence of full reconciliation.

- c. The probable impact of the proposed action on the environment.
- (1) This requires assessment of the positive and negative effects of the proposed action as it affects both national and international human environment. The attention given to different environmental factors will vary according to the nature, scale, and location of proposed actions. Among factors to be considered should be the potential effect of the action on such aspects of the environment as those listed in Attachment 4. Primary attention should be given in the statement to discussing those factors most evidently impacted by the proposed action.
 - (2) Secondary and other foreseeable effects, as well as primary consequences for the environment, should be included in the analysis. Secondary effects, such as impacts on existing community facilities and activities inducing new facilities and activities, may often be even more substantial than the primary effects of the original action itself. For example, the effects of the proposed action on population and growth may be among the more significant secondary effects. Such population and growth impacts should be estimated and an assessment made on their effects upon the resource base, including land use, water, and public services, of the area in question.
- d. Alternatives to the proposed action, including, where relevant, those not within the existing authority of the responsible preparing office. Section 102(2)(D) of NEPA requires the responsible agency to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." A rigorous exploration and an objective evaluation of

the environmental impacts of all reasonable alternative actions, particularly those that might enhance environmental quality or avoid some or all of the adverse environmental effects, are essential. Sufficient analysis of such alternatives and their environmental benefits, costs, and risks should accompany the proposed action through the review process in order not to foreclose prematurely options which might enhance environmental quality or have less detrimental effects. Examples of such alternatives include: the alternative of not taking any action or of postponing action pending further study; alternatives requiring actions of a significantly different nature which would provide similar benefits with different environmental impacts, e.g. low capital intensive improvements, mass transit alternatives to highway construction; alternatives related to different locations or designs or details of the proposed action which would present different environmental impacts. In each case, the analysis should be sufficiently detailed to reveal comparative evaluation of the environmental benefits, costs, and risks of the proposed action and each reasonable alternative. Where an existing impact statement already contains such an analysis its treatment of alternatives may be incorporated, provided such treatment is current and relevant to the precise purpose of the proposed action.

- e. Any probable adverse environmental effects which cannot be avoided (such as water or air pollution, noise, undesirable land use patterns, or impacts on public parks and recreation areas, wildlife and waterfowl refuges, or on historic sites, damage to life systems, traffic congestion, threats to health, or other consequences adverse to the environmental goals set out in Section 101(b) of NEPA). This should be a brief section summarizing in one place those effects discussed in paragraph 3c that are adverse and unavoidable under the proposed action. Included for purposes of contrast should be a clear statement of how all adverse effects will be mitigated.

- f. The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity. This section should contain a brief discussion of the extent to which the proposed action involves tradeoffs between short-term environmental gains at the expense of long-term losses, or vice versa, and a discussion of the extent to which the proposed action forecloses future options.
- g. Any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented. This requires identification of unavoidable impacts and the extent to which the action irreversibly curtails the range of potential uses of the environment. "Resources" means not only the labor and materials devoted to an action but also the natural and cultural resources lost or destroyed.
- h. An indication of what other interests and considerations of Federal policy are thought to offset the adverse environmental effects of the proposed action identified pursuant to subparagraphs (c) and (e) of this paragraph. The statement should also indicate the extent to which these stated countervailing benefits could be realized by following reasonable alternatives to the proposed action (as identified in subparagraph (d) of this paragraph) that would avoid some or all of the adverse environmental effects. In this connection, cost-benefit analyses of proposed actions, if prepared, should be attached, or summaries thereof, to the environmental impact statement, and should clearly indicate the extent to which environmental costs have not been reflected in such analyses.
- i. A discussion of problems and objections raised by other Federal agencies, State and local entities, and citizens in the review process, and the disposition of the issues involved and the reasons therefor. (This section may be added to the final environmental statement at the end of the review process.)

- (1) The draft and final statements should document issues raised through consultations with Federal, State, and local agencies with jurisdiction or special expertise and with citizens, of actions taken in response to comments, public hearings, and other citizen involvement proceedings.
- (2) Any unresolved environmental issues and efforts to resolve them, through further consultations or otherwise, should be identified in the final statement. For instance, where an agency comments that the statement has inadequate analysis or that the agency has reservations concerning the impacts, or believes that the impacts are too adverse for approval, either the issue should be resolved or the final statement should reflect efforts to resolve the issue and set forth any action that will result.
- (3) The statement should reflect that every effort was made to discover and discuss all major points of view on the environmental effects of the proposed action and alternatives in the draft statement. However, where opposing professional views and responsible opinion have been overlooked in the draft statement and are raised through the commenting process, the environmental effects of the action should be reviewed in light of those views. A meaningful reference should be made in the final statement to the existence of any responsible opposing view not adequately discussed in the draft statement indicating responses to the issues raised.
- (4) All substantive comments received on the draft (or summaries of responses from the public which have been exceptionally voluminous) should be attached to the final statement, whether or not each such comment is thought to merit individual discussion in the text of the statement.

- j. Draft statements should indicate at appropriate points in the text any underlying studies, reports, and other information obtained and considered in preparing the statement, including any cost-benefit analyses prepared. In the case of documents not likely to be easily accessible (such as internal studies or reports), the statement should indicate how such information may be obtained. If such information is attached to the statement, care should be taken to insure that the statement remains an essentially self-contained instrument, capable of being understood by the reader without the need for undue cross reference.
4. Publicly Owned Parklands, Recreational Areas, Wildlife and Waterfowl Refuges and Historic Sites. The following points are to be covered:
 - a. Description of "any publicly owned land from a public park, recreational area or wildlife and waterfowl refuge" or "any land from an historic site" affected or taken by the project. This includes its size, available activities, use, patronage, unique or irreplaceable qualities, relationship to other similarly used lands in the vicinity of the project, maps, plans, slides, photographs, and drawings showing in sufficient scale and detail the project. This also includes its impact on park, recreation, wildlife, or historic areas, and changes in vehicular or pedestrian access.
 - b. Statement of the "national, State or local significance" of the entire park, recreation area, refuge, or historic site "as determined by the Federal, State or local officials having jurisdiction thereof."
 - (1) In the absence of such a statement lands will be presumed to be significant. Any statement of "insignificance" by the official having jurisdiction is subject to review by the Department as to whether such statement is capricious.

- (2) Where Federal lands are administered for multiple uses, the Federal official having jurisdiction over the lands shall determine whether the subject lands are in fact being used for park, recreation, wildlife, waterfowl, or historic purposes.

c. Similar data, as appropriate, for alternative designs and locations, including detailed cost estimates (with figures showing percentage differences in total project costs) and technical feasibility, and appropriate analysis of the alternatives, including any unique problems present and evidence that the cost or community disruptions resulting from alternative routes reach extraordinary magnitudes. This portion of the statement should demonstrate compliance with the Supreme Court's statement in the Overton Park case, as follows:

"The very existence of the statute indicates that the protection of parklands was to be given paramount importance. The few green havens that are public parks were not to be lost unless there were truly unusual factors present in a particular case or the cost or community disruption resulting from alternative routes reached extraordinary magnitudes. If the statutes are to have any meaning, the Secretary cannot approve the destruction of parkland unless he finds that the alternative routes present unique problems."

d. If there is no feasible and prudent alternative, description of all planning undertaken to minimize harm to the protected area and statement of actions taken or to be taken to implement this planning, including measures to maintain or enhance the natural beauty of the lands traversed.

- (1) Measures to minimize harm may include replacement of land and facilities, providing land or facilities, provision for functional replacement of the facility (see 49 C.F.R. 25.267).

- (2) Design measures to minimize harm; e.g., tunneling, cut and cover, cut and fill, treatment of embankments, planting, screening, maintenance of pedestrian or bicycle paths and noise mitigation measures all reflecting utilization of appropriate interdisciplinary design personnel.
 - e. Evidence of concurrence or description of efforts to obtain concurrence of Federal, State or local officials having jurisdiction over the Section 4(f) property regarding the action proposed and the measures planned to minimize harm.
 - f. If Federally-owned properties are involved in highway projects, the final statement shall include the action taken or an indication of the expected action after filing a map of the proposed use of the land or other appropriate documentation with the Secretary of the Department supervising the land (23 U.S.C. 317).
 - g. If land acquired with Federal grant money (Department of Housing and Urban Development open space or Bureau of Outdoor Recreation land and water conservation funds) is involved, the final statement shall include appropriate communications with the grantor agency.
 - h. TGC will determine application of Section 4(f) to public interests in lands, such as easements, reversions, etc.
 - i. A specific statement that there is no feasible and prudent alternative and that the proposal includes all possible planning to minimize harm to the "4(f) area" involved.
5. Properties and Sites of Historic and Cultural Significance. The statement should document actions taken to preserve and enhance districts, sites, buildings, structures, and objects of historical, architectural, archeological, or cultural significance affected by the action.

- a. Draft environmental statements should include identification, through consulting the National Register and applying the National Register Criteria (36 C.F.R. Part 800), of properties that are included in or eligible for inclusion in the National Register of Historic Places that may be affected by the project. The National Register is published in its entirety each February in the Federal Register. Monthly additions and listings of eligible properties are published in the Federal Register the first Tuesday of each month. The Secretary of the Interior will advise, upon request, whether properties are eligible for the National Register.
- b. If application of the Advisory Council on Historic Preservation's (ACHP) Criteria of Effect (36 C.F.R. Part 800) indicates that the project will have an effect upon a property included in or eligible for inclusion in the National Register of Historic Places, the draft environmental statement should document the effect. Evaluation of the effect should be made in consultation with the State Historic Preservation Officer (SHPO) and in accordance with the ACHP's Criteria of Adverse Effect (36 C.F.R. Part 800).
- c. Determinations of no adverse effect should be documented in the draft statement with evidence of the application of the ACHP's Criteria of Adverse Effect, the views of the appropriate State Historic Preservation Officer, and submission of the determination to the ACHP for review.
- d. If the project will have an adverse effect upon a property included in or eligible for inclusion in the National Register of Historic Places, the final environmental statement should include either an executed Memorandum of Agreement or comments from the Council after consideration of the project at a meeting of the ACHP and an account of actions to be taken in response to the comments of the ACHP. Procedures for obtaining a Memorandum of Agreement and the comments of the Council are found in 36 C.F.R. Part 800.
- e. To determine whether the project will have an effect on properties of State or local historical, architectural, archaeological, or cultural significance not included in or eligible for inclusion in the National Register, the responsible official should consult with the State Historic Preservation Officer, with the local official

having jurisdiction of the property, and where appropriate, with historical societies, museums, or academic institutions having expertise with regard to the property. Use of land from historic properties of Federal, State and local significance as determined by the official having jurisdiction thereof involves Section 4(f) of the DOT Act and documentation should include information necessary to consider a 4(f) determination (see paragraph 4).

6. Impacts of the Proposed Action on the Human Environment Involving Community Disruption and Relocation.

- a. The statement should include a description of probable impact sufficient to enable an understanding of the extent of the environmental and social impact of the project alternatives and to consider whether relocation problems can be properly handled. This would include the following information obtainable by visual inspection of the proposed affected area and from secondary sources and community sources when available.
 - (1) An estimate of the households to be displaced including the family characteristics (e.g., minorities, and income levels, tenure, the elderly, large families).
 - (2) Impact on the human environment of an action which divides or disrupts an established community, including, where pertinent, the effect of displacement on types of families and individuals affected, effect of streets cut off, separation of residences from community facilities, separation of residential areas.
 - (3) Impact on the neighborhood and housing to which relocation is likely to take place (e.g., lack of sufficient housing for large families, doublings up).
 - (4) An estimate of the businesses to be displaced, and the general effect of business dislocation on the economy of the community.

- (5) A discussion of relocation housing in the area and the ability to provide adequate relocation housing for the types of families to be displaced. If the resources are insufficient to meet the estimated displacement needs, a description of the actions proposed to remedy this situation including, if necessary, use of housing of last resort.
 - (6) Results of consultation with local officials and community groups regarding the impacts to the community affected. Relocation agencies and staff and other social agencies can help to describe probable social impacts of this proposed action.
 - (7) Where necessary, special relocation advisory services to be provided the elderly, handicapped and illiterate regarding interpretations of benefits, assistance in selecting replacement housing, and consultation with respect to acquiring, leasing, and occupying replacement housing.
- b. This data should provide the preliminary basis for assurance of the availability of relocation housing as required by DOT 5620.1, Replacement Housing Policy, dated June 24, 1970, and 49 C.F.R. 25.53.
7. Considerations Relating to Pedestrians and Bicyclists. Where appropriate, the statement should discuss impacts on and consideration to be given in the development of the project to pedestrian and bicycle access, movement and safety within the affected area, particularly in medium and high density commercial and residential areas.
8. Other Social Impacts. The general social groups specially benefitted or harmed by the proposed action should be identified in the statement, including the following:
- a. Particular effects of a proposal on the elderly, handicapped, non-drivers, transit dependent, or minorities should be described to the extent reasonably predictable.
 - b. How the proposal will facilitate or inhibit their access to jobs, educational facilities, religious institutions, health and welfare services, recreational facilities, social and cultural facilities, pedestrian movement facilities, and public transit services.

9. Standards as to Noise, Air, and Water Pollution. The statement shall reflect sufficient analysis of the effects of the proposed action on attainment and maintenance of any environmental standards established by law or administrative determination (e.g., noise, ambient air quality, water quality including the following documentation:
 - a. With respect to water quality, there should be consultation with the agency responsible for the State water pollution control program as to conformity with standards and regulations regarding storm sewer discharge sedimentation control, and other non-point source discharges.
 - b. The comments or determinations of the offices charged with administration of the State's implementation plan for air quality as to the consistency of the project with State plans for the implementation of ambient air quality standards.
 - c. Conformity to adopted noise standards, compatible, if appropriate, with different land uses.
10. Energy Supply and Natural Resources Development. Where applicable, the statement should reflect consideration of whether the project or program will have any effect on either the production or consumption of energy and other natural resources, and discuss such effects if they are significant.
11. Flood Hazard Evaluation. When an alternative under consideration encroaches on a flood plain, the statement should include evidence that studies have been made and evidence of consultations with agencies with expertise have been carried out. Necessary measures to handle flood hazard problems should be described, in compliance with Executive Order 11296 and Flood Hazard Guidelines for Federal Executive Agencies, promulgated by the Water Resources Council, or how such requirements can be met during project development.

12. Considerations Relating to Wetlands or Coastal Zones.

Where wetlands or coastal zones are involved, the statement should include:

- a. Information on location, types, and extent of wetlands areas which might be affected by the proposed action.
- b. An assessment of the impacts resulting from both construction and operation of the project on the wetlands and associated wildlife, and measures to minimize adverse impacts.
- c. A statement by the local representative of the Department of the Interior, and any other responsible officials with special expertise, setting forth his views on the impacts of the project on the wetlands, the worth of the particular wetlands areas involved to the community and to the Nation, and recommendations as to whether the proposed action should proceed, and, if applicable, along what alternative route.
- d. Where applicable, a discussion of how the proposed project relates to the State coastal zone management program for the particular State in which the project is to take place.

13. Construction Impacts. In general, adverse impacts during construction will be of less importance than long-term impacts of a proposal. Nonetheless, statements should appropriately address such matters as the following identifying any special problem areas:

- a. Noise impacts from construction and any specifications setting maximum noise levels.
- b. Disposal of spoil and effect on borrow areas and disposal sites (include specifications where special problems are involved).
- c. Measures to minimize effects on traffic and pedestrians.

14. Land Use and Urban Growth. The statement should include, to the extent relevant and predictable:
 - a. The effect of the project on land use, development patterns, and urban growth.
 - b. Where significant land use and development impacts are anticipated, identify public facilities needed to serve the new development and any problems or issues which would arise in connection with these facilities, and the comments of agencies that would provide these facilities.
15. Projects under Section 16 of the Airport Act: New Airports, Runways, and Runway Extensions.
 - a. Identification of communities in or near which the project is located.
 - b. Identification of steps taken by the applicant to determine the interests of those communities, including economic, environmental, and social interests, as well as transportation interests.
 - c. Statement of the specific actions taken in planning the project to recognize and to meet the communities interests.
 - d. For identified community interests which are in conflict with the project, a statement explaining why the interests have not been met, what alternatives have been investigated to meet the community interests, estimated costs of the alternatives and the reasons for not adopting the alternatives.
 - e. Consistency of the project with plans (existing at the time of approval of the project) of planning agencies for development of the area in which the airport is located.
 - f. Identification of existing land uses and location and nature of nearby noise sensitive public or private facilities, with noise contours describing cumulative impact on existing and planned land uses.

- g. Assurances that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and take-off of aircraft.
 - h. For any project found to have an adverse effect on the environment, and for which no feasible and prudent alternative exists, identify all steps taken to minimize such adverse effect.
 - i. Statement that the public hearings required by Section 16(d) of the Airport Act have been held.
 - j. Statement by appropriate local planning officials that the project is consistent with the goals and objectives of such urban planning as has been carried out by the community.
 - k. Where relevant, certification by the Governor or appropriate Federal official that there is reasonable assurance that the project will be located, designed, constructed, and operated so as to comply with applicable air and water quality standards.
16. Projects under Section 14 of the Mass Transportation Act: Mass Transit Projects with a Significant Impact on the Quality of the Human Environment:
- a. Evidence of the opportunity that was afforded for the presentation of views by all parties with a significant economic, social or environmental interest.

- b. Evidence that fair consideration has been given to the preservation and enhancement of the environment and to the interests of the community in which the project is located.
- c. If there is an adverse environmental effect and there is no feasible and prudent alternative, description of all planning undertaken to minimize such adverse environmental effect and statement of actions taken or to be taken to implement the planning; or a specific statement that there is no adverse environmental effect.

RESEARCH ACTIVITIES

Pursuant to CEQ guidelines, Departmental officials "engaging in major technology research and development programs should develop procedures for periodic evaluation to determine when a program statement is required for such programs." (Section 1500.6(d)(2)) Such procedures shall be developed under the direction of TST in accordance with Paragraph 4.a. of this Order.

1. Factors to be considered in making this determination include the magnitude of Federal investment in the program, the likelihood of widespread application of the technology, the degree of environmental impact which would occur if the technology were widely applied, and the extent to which continued investment in the new technology is likely to restrict future alternatives.
2. Statements must be written late enough in the development process to contain meaningful information, but early enough so that this information can practically serve as an input in the decision-making process.
3. Where it is anticipated that a statement may ultimately be required but that its preparation is still premature, the office should prepare a publicly available record briefly setting forth the reasons for its determination that a statement is not yet necessary. This record should be periodically updated, particularly when significant new information becomes available concerning the potential environmental impact of the program.
4. In any case, a statement must be prepared before research activities have reached a state of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives.
5. Statements on technology research and development programs should include an analysis not only of alternatives forms of the same technology that might reduce any adverse environmental impacts but also of alternative technologies that would serve the same function as the technology under consideration.
6. Efforts should be made to involve other Federal agencies and interested groups with relevant expertise in the preparation of such statements because the impacts and alternatives to be considered are likely to be less well defined than in other types.

AREAS OF ENVIRONMENTAL IMPACT AND FEDERAL AGENCIES
AND FEDERAL-STATE AGENCIES¹ WITH JURISDICTION BY
LAW OR SPECIAL EXPERTISE TO COMMENT THEREON²

AIR

Air Quality

Department of Agriculture—
Forest Service (effects on vegetation)
Atomic Energy Commission (radioactive substances)
Department of Health, Education, and Welfare
Environmental Protection Agency
Department of the Interior—
Bureau of Mines (fossil and gaseous fuel combustion)
Bureau of Sport Fisheries and Wildlife (effect on wildlife)
Bureau of Outdoor Recreation (effects on recreation)
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
National Aeronautics and Space Administration (remote sensing, aircraft emissions)
Department of Transportation—
Assistant Secretary for Systems Development and Technology (auto emissions)
Coast Guard (vessel emissions)
Federal Aviation Administration (aircraft emissions)

Weather Modification

Department of Agriculture—
Forest Service
Department of Commerce—
National Oceanic and Atmospheric Administration
Department of Defense—
Department of the Air Force
Department of the Interior
Bureau of Reclamation

WATER RESOURCES COUNCIL

WATER

Water Quality

Department of Agriculture—
Soil Conservation Service
Forest Service
Atomic Energy Commission (radioactive substances)

¹ River Basin Commissions (Delaware, Great Lakes, Missouri, New England, Ohio, Pacific Northwest, Souris-Red-Rainy, Susquehanna, Upper Mississippi) and similar Federal-State agencies should be consulted on actions affecting the environment of their specific geographic jurisdictions.

² In all cases where a proposed action will have significant international environmental effects, the Department of State should be consulted, and should be sent a copy of any draft and final impact statement which covers such action.

Department of the Interior—

Bureau of Reclamation
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Sports Fisheries and Wildlife
Bureau of Outdoor Recreation
Geological Survey
Office of Saline Water
Environmental Protection Agency
Department of Health, Education, and Welfare
Department of Defense—
Army Corps of Engineers
Department of the Navy (ship pollution control)
National Aeronautics and Space Administration (remote sensing)
Department of Transportation—
Coast Guard (oil spills, ship sanitation)
Department of Commerce—
National Oceanic and Atmospheric Administration
Water Resources Council
River Basin Commissions (as geographically appropriate)

Marine Pollution, Commercial Fishery Conservation, and Shellfish Sanitation

Department of Commerce—

National Oceanic and Atmospheric Administration
Department of Defense—
Army Corps of Engineers
Office of the Oceanographer of the Navy
Department of Health, Education, and Welfare
Department of the Interior—
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
Bureau of Land Management (outer continental shelf)
Geological Survey (outer continental shelf)
Department of Transportation—
Coast Guard
Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
Water Resources Council
River Basin Commissions (as geographically appropriate)

Waterway Regulation and Stream Modification

Department of Agriculture—

Soil Conservation Service
Department of Defense—
Army Corps of Engineers
Department of the Interior—
Bureau of Reclamation
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
Geological Survey
Department of Transportation—
Coast Guard
Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
Water Resources Council
River Basin Commissions (as geographically appropriate)

FISH AND WILDLIFE

Department of Agriculture—
Forest Service
Soil Conservation Service
Department of Commerce—
National Oceanic and Atmospheric Administration (marine species)
Department of the Interior—
Bureau of Sport Fisheries and Wildlife
Bureau of Land Management
Bureau of Outdoor Recreation
Environmental Protection Agency

SOLID WASTE

Atomic Energy Commission (radioactive waste)
Department of Defense—
Army Corps of Engineers
Department of Health, Education, and Welfare
Department of the Interior—
Bureau of Mines (mineral waste, mine acid waste, municipal solid waste, recycling)
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
Geological Survey (geologic and hydrologic effects)
Office of Saline Water (demineralization)
Department of Transportation—
Coast Guard (ship sanitation)
Environmental Protection Agency
River Basin Commissions (as geographically appropriate)
Water Resources Council

NOISE

Department of Commerce—
National Bureau of Standards
Department of Health, Education, and Welfare
Department of Housing and Urban Development (land use and building materials aspects)
Department of Labor—
Occupational Safety and Health Administration
Department of Transportation—
Assistant Secretary for Systems Development and Technology
Federal Aviation Administration, Office of Noise Abatement
Environmental Protection Agency
National Aeronautics and Space Administration

RADIATION

Atomic Energy Commission
Department of Commerce—
National Bureau of Standards
Department of Health, Education, and Welfare
Department of the Interior—
Bureau of Mines (uranium mines)
Mining Enforcement and Safety Administration (uranium mines)
Environmental Protection Agency

HAZARDOUS SUBSTANCES

Toxic Materials

Atomic Energy Commission (radioactive substances)
Department of Agriculture—
Agricultural Research Service
Consumer and Marketing Service
Department of Commerce—
National Oceanic and Atmospheric Administration
Department of Defense
Department of Health, Education, and Welfare
Environmental Protection Agency

Food Additives and Contamination of Foodstuffs

Department of Agriculture—
Consumer and Marketing Service (meat and poultry products)
Department of Health, Education, and Welfare
Environmental Protection Agency

Pesticides

Department of Agriculture—
Agricultural Research Service (biological controls, food and fiber production)
Consumer and Marketing Service
Forest Service
Department of Commerce—
National Oceanic and Atmospheric Administration
Department of Health, Education, and Welfare
Department of the Interior—
Bureau of Sport Fisheries and Wildlife (fish and wildlife effects)
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Reclamation (irrigated lands)
Environmental Protection Agency

Transportation and Handling of Hazardous Materials

Atomic Energy Commission (radioactive substances)
Department of Commerce—
Maritime Administration
National Oceanic and Atmospheric Administration (effects on marine life and the coastal zone)
Department of Defense—
Armed Services Explosive Safety Board
Army Corps of Engineers (navigable waterways)
Department of Transportation—
Federal Highway Administration, Bureau of Motor Carrier Safety
Coast Guard
Federal Railroad Administration
Federal Aviation Administration
Assistant Secretary for Systems Development and Technology
Office of Hazardous Materials
Office of Pipeline Safety
Environmental Protection Agency

**ENERGY SUPPLY AND NATURAL RESOURCES
DEVELOPMENT**

*Electric Energy Development, Generation,
and Transmission, and Use*

Atomic Energy Commission (nuclear)
Department of Agriculture—
Rural Electrification Administration
(rural areas)
Department of Defense—
Army Corps of Engineers (hydro)
Department of Health, Education, and Wel-
fare (radiation effects)
Department of Housing and Urban Develop-
ment (urban areas)
Department of the Interior—
Bureau of Indian Affairs (Indian lands)
Bureau of Land Management (public
lands)
Bureau of Reclamation
Power Marketing Administrations
Geological Survey
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
National Park Service
Environmental Protection Agency
Federal Power Commission (hydro, transmis-
sion, and supply)
River Basin Commissions (as geographically
appropriate)
Tennessee Valley Authority
Water Resources Council

*Petroleum Development, Extraction,
Refining, Transport, and Use*

Department of the Interior—
Office of Oil and Gas
Bureau of Mines
Geological Survey
Bureau of Land Management (public lands
and outer continental shelf)
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife
(effects on fish and wildlife)
Bureau of Outdoor Recreation
National Park Service
Department of Transportation (Transport
and Pipeline Safety)
Environmental Protection Agency
Interstate Commerce Commission

*Natural Gas Development, Production,
Transmission, and Use*

Department of Housing and Urban Develop-
ment (urban areas)
Department of the Interior—
Office of Oil and Gas
Geological Survey
Bureau of Mines
Bureau of Land Management (public
lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
National Park Service
Department of Transportation (transport
and safety)
Environmental Protection Agency
Federal Power Commission (production,
transmission, and supply)
Interstate Commerce Commission

*Coal and Minerals Development, Mining,
Conversion, Processing, Transport, and Use*

Appalachian Regional Commission
Department of Agriculture—
Forest Service
Department of Commerce
Department of the Interior—
Office of Coal Research
Mining Enforcement and Safety Adminis-
tration
Bureau of Mines
Geological Survey
Bureau of Indian Affairs (Indian lands)
Bureau of Land Management (public
lands)
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
National Park Service
Department of Labor—
Occupational Safety and Health Adminis-
tration
Department of Transportation
Environmental Protection Agency
Interstate Commerce Commission
Tennessee Valley Authority

*Renewable Resource Development, Produc-
tion, Management, Harvest, Transport, and
Use*

Department of Agriculture—
Forest Service
Soil Conservation Service
Department of Commerce
Department of Housing and Urban Develop-
ment (building materials)
Department of the Interior—
Geological Survey
Bureau of Land Management (public
lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
National Park Service
Department of Transportation
Environmental Protection Agency
Interstate Commerce Commission (freight
rates)

Energy and Natural Resources Conservation

Department of Agriculture—
Forest Service
Soil Conservation Service
Department of Commerce—
National Bureau of Standards (energy
efficiency)
Department of Housing and Urban Devel-
opment—
Federal Housing Administration (housing
standards)
Department of the Interior—
Office of Energy Conservation
Bureau of Mines
Bureau of Reclamation
Geological Survey
Power Marketing Administration
Department of Transportation
Environmental Protection Agency
Federal Power Commission
General Services Administration (design and
operation of buildings)
Tennessee Valley Authority

LAND USE AND MANAGEMENT

*Land Use Changes, Planning and Regulation
of Land Development*

Department of Agriculture—
Forest Service (forest lands)
Agricultural Research Service (agricultural
lands)
Department of Housing and Urban Develop-
ment
Department of the Interior—
Office of Land Use and Water Planning
Bureau of Land Management (public la
Bureau of Land Management (public
lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife
(wildlife refuges)
Bureau of Outdoor Recreation (recreation
lands)
National Park Service (NPS units)
Department of Transportation
Environmental Protection Agency (pollution
effects)
National Aeronautics and Space Administra-
tion (remote sensing)
River Basins Commissions (as geographically
appropriate).

Public Land Management

Department of Agriculture—
Forest Service (forests)
Department of Defense
Department of the Interior—
Bureau of Land Management
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife
(wildlife refuges)
Bureau of Outdoor Recreation (recreation
lands)
National Park Service (NPS units)
Federal Power Commission (project lands)
General Services Administration
National Aeronautics and Space Administra-
tion (remote sensing)
Tennessee Valley Authority (project lands)

*PROTECTION OF ENVIRONMENTALLY CRITICAL
AREAS—FLOODPLAINS, WETLANDS, BEACHES
AND DUNES, UNSTABLE SOILS, STEEP SLOPES,
AQUIFER RECHARGE AREAS, ETC.*

Department of Agriculture—
Agricultural Stabilization and Conserva-
tion Service
Soil Conservation Service
Forest Service
Department of Commerce—
National Oceanic and Atmospheric Admin-
istration (coastal areas)
Department of Defense—
Army Corps of Engineers
Department of Housing and Urban Develop-
ment (urban and floodplain areas)

Department of the Interior—
Office of Land Use and Water Planning
Bureau of Outdoor Recreation
Bureau of Reclamation
Bureau of Sport Fisheries and Wildlife
Bureau of Land Management
Geological Survey

Environmental Protection Agency (pollution
effects)
National Aeronautics and Space Administra-
tion (remote sensing)
River Basins Commissions (as geographically
appropriate)
Water Resources Council

LAND USE IN COASTAL AREAS

Department of Agriculture—
Forest Service
Soil Conservation Service (soil stability,
hydrology)
Department of Commerce—
National Oceanic and Atmospheric Admin-
istration (impact on marine life and
coastal zone management)
Department of Defense—
Army Corps of Engineers (beaches, dredge
and fill permits, Refuse Act permits)
Department of Housing and Urban Develop-
ment (urban areas)
Department of the Interior—
Office of Land Use and Water Planning
Bureau of Sport Fisheries and Wildlife
National Park Service
Geological Survey
Bureau of Outdoor Recreation
Bureau of Land Management (public
lands)
Department of Transportation—
Coast Guard (bridges, navigation)
Environmental Protection Agency (pollution
effects)
National Aeronautics and Space Administra-
tion (remote sensing)

REDEVELOPMENT AND CONSTRUCTION IN
BUILT-UP AREA*

Department of Commerce—
Economic Development Administration
(designated areas)
Department of Housing and Urban Develop-
ment
Department of the Interior—
Office of Land Use and Water Planning
Department of Transportation
Environmental Protection Agency
General Services Administration
Office of Economic Opportunity

DENSITY AND CONGESTION MITIGATION

Department of Health, Education, and Wel-
fare
Department of Housing and Urban Develop-
ment
Department of the Interior—
Office of Land Use and Water Planning
Bureau of Outdoor Recreation
Department of Transportation
Environmental Protection Agency

NEIGHBORHOOD CHARACTER AND CONTINUITY

Department of Health, Education, and Wel-
fare
Department of Housing and Urban Develop-
ment
National Endowment for the Arts
Office of Economic Opportunity

IMPACTS ON LOW-INCOME POPULATIONS

Department of Commerce—
Economic Development Administration
(designated areas)
Department of Health, Education, and Welfare
Department of Housing and Urban Development
Office of Economic Opportunity

**HISTORIC, ARCHITECTURAL, AND ARCHEOLOGICAL
PRESERVATION**

Advisory Council on Historic Preservation
Department of Housing and Urban Development
Department of the Interior—
National Park Service
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
General Services Administration
National Endowment for the Arts

**SOIL AND PLANT CONSERVATION AND
HYDROLOGY**

Department of Agriculture—
Soil Conservation Service
Agricultural Service
Forest Service
Department of Commerce—
National Oceanic and Atmospheric Administration
Department of Defense—
Army Corps of Engineers (dredging, aquatic plants)
Department of Health, Education, and Welfare
Department of the Interior—
Bureau of Land Management
Bureau of Sport Fisheries and Wildlife
Geological Survey
Bureau of Reclamation
Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
River Basin Commissions (as geographically appropriate)
Water Resources Council

OUTDOOR RECREATION

Department of Agriculture—
Forest Service
Soil Conservation Service
Department of Defense—
Army Corps of Engineers
Department of Housing and Urban Development (urban areas)
Department of the Interior—
Bureau of Land Management
National Park Service
Bureau of Outdoor Recreation
Bureau of Sport Fisheries and Wildlife
Bureau of Indian Affairs
Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
River Basin Commissions (as geographically appropriate)
Water Resources Council

OFFICES WITHIN FEDERAL AGENCIES AND FEDERAL-STATE
AGENCIES FOR INFORMATION REGARDING THE AGENCIES'
NEPA ACTIVITIES AND FOR RECEIVING OTHER AGENCIES'
IMPACT STATEMENTS FOR WHICH COMMENTS ARE REQUESTED

ADVISORY COUNCIL ON HISTORIC PRESERVATION

Office of Architectural and Environmental
Preservation, Advisory Council on Historic
Preservation, Suite 430, 1522 K Street,
N.W., Washington, D.C. 20005 254-3974

ENVIRONMENTAL PROTECTION AGENCY*

Director, Office of Federal Activities, Environ-
mental Protection Agency, 401 M Street,
S.W., Washington, D.C. 20460 755-0777

Regional Administrator, I,
U.S. Environmental Protection Agency
Room 2303, John F. Kennedy
Federal Bldg., Boston, Mass. 02203,
(617) 223-7210

Connecticut, Maine, Massachusetts, New
Hampshire, Rhode Island, Vermont

Regional Administrator, II,
U.S. Environmental Protection Agency
Room 908, 26 Federal Plaza
New York, New York 10007
(212) 264-2525

New Jersey, New York, Puerto Rico, Virgin
Islands

Regional Administrator, III,
U.S. Environmental Protection Agency
Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pa. 19106
(215) 597-9801

Delaware, Maryland, Pennsylvania, Virginia
West Virginia, District of Columbia

Regional Administrator, IV,
U.S. Environmental Protection Agency
1421 Peachtree Street
N.E., Atlanta, Ga. 30309
(404) 526-5727

Alabama, Florida, Georgia, Kentucky Missis-
sippi, North Carolina, South Carolina, Ten-
nessee

Regional Administrator V,
U.S. Environmental Protection Agency
1 N. Wacker Drive
Chicago, Illinois 60606
(312) 353-5250

Illinois, Indiana, Michigan, Minnesota, Ohio,
Wisconsin

Regional Administrator VI,
U.S. Environmental Protection Agency
1600 Patterson Street
Suite 1100
Dallas, Texas 75201
(214) 749-1962

Arkansas, Louisiana, New Mexico, Texas,
Oklahoma

Regional Administrator VII,
U.S. Environmental Protection Agency
1735 Baltimore Avenue
Kansas City, Missouri 64108
(816) 374-5493

Iowa, Kansas, Missouri, Nebraska

Regional Administrator VIII,
U.S. Environmental Protection Agency
Suite 900, Lincoln Tower
1860 Lincoln Street
Denver, Colorado 80203
(303) 837-3895

Colorado, Montana, North Dakota, South
Dakota, Utah, Wyoming

Regional Administrator IX,
U.S. Environmental Protection Agency
100 California Street
San Francisco, California 94111
(415) 556-2320

Arizona, California, Hawaii, Nevada, Ameri-
can Samoa, Guam, Trust Territories of
Pacific Islands, Wake Island

Regional Administrator X,
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101
(206) 442-1220

Alaska, Idaho, Oregon, Washington

* Contact the Office of Federal Activities
for environmental statements concerning
legislation, regulations, national program
proposals or other major policy issues.

For all other EPA consultation, contact the
Regional Administrator in whose area the
proposed action (e.g., highway or water re-
source construction projects) will take place.
The Regional Administrators will coordinate
the EPA review. Addresses of the Regional
Administrators, and the areas covered by
their regions are as follows:

Attachment 5
Page 2

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DEPARTMENT OF AGRICULTURE¹

Office of the Secretary, Attn: Coordinator
Environmental Quality Activities, U.S. De-
partment of Agriculture, Washington, D.C.
20250 447-3965

APPALACHIAN REGIONAL COMMISSION

Office of the Alternate Federal Co-Chairman,
Appalachian Regional Commission, 1666
Connecticut Avenue, N.W., Washington,
D.C. 20235 967-4103

DEPARTMENT OF THE ARMY (CORPS OF ENGINEERS)

Executive Director of Civil Works, Office of
the Chief of Engineers, U.S. Army Corps of
Engineers, Washington, D.C. 20314 693-
7168

ATOMIC ENERGY COMMISSION

For nonregulatory matters: Office of Assistant
General Manager for Biomedical and En-
vironmental Research and Safety Pro-
grams, Atomic Energy Commission, Wash-
ington, D.C. 20545 973-3208

For regulatory matters: Office of the Assist-
ant Director for Environmental Projects,
Atomic Energy Commission, Washington,
D.C. 20545 973-7531

DEPARTMENT OF COMMERCE

Office of the Deputy Assistant Secretary for
Environmental Affairs, U.S. Department of
Commerce, Washington, D.C. 20230 967-
4335

DEPARTMENT OF DEFENSE

Office of the Assistant Secretary for Defense
(Health and Environment), U.S. Depart-
ment of Defense, Room 3E172, The Penta-
gon, Washington, D.C. 20301 697-2111

DELAWARE RIVER BASIN COMMISSION

Office of the Secretary, Delaware River
Basin Commission, Post Office Box 360,
Trenton, N.J. 08603 (609) 883-9500

FEDERAL POWER COMMISSION

Commission's Advisor on Environmental
Quality, Federal Power Commission, 825 N.
Capitol Street, N.E., Washington, D.C. 20426
386-6084

GENERAL SERVICES ADMINISTRATION

Office of Environmental Affairs, Office of the
Deputy Administrator for Special Projects,
General Services Administration, Washing-
ton, D.C. 20405 343-4161

¹Requests for comments or information
from individual units of the Department of
Agriculture, e.g., Soil Conservation Service,
Forest Service, etc. should be sent to the
Office of the Secretary, Department of Agri-
culture, at the address given above.

GREAT LAKES BASIN COMMISSION

Office of the Chairman, Great Lakes Basin
Commission, 3475 Plymouth Road, P.O. Box
999, Ann Arbor, Michigan 48105 (313) 769-
7431

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE²

Office of Environmental Affairs, Office of the
Assistant Secretary for Administration and
Management, Department of Health, Edu-
cation and Welfare, Washington, D.C. 20202
963-4456

Region I:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
Room 2007B
John F. Kennedy Center
Boston, Massachusetts 02203 (617) 223-
6837

Region II:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
Federal Building
26 Federal Plaza
New York, New York 10007 (212) 264-
1308

Region III:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
P.O. Box 13716
Philadelphia, Pennsylvania 19101 (215)
597-6498

Region IV:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
Room 404
50 Seventh Street, N.E.
Atlanta, Georgia 30323 (404) 526-5817

Region V:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
Room 712, New Post Office Building
433 West Van Buren Street
Chicago, Illinois 60607 (312) 353-1644

²Contact the Office of Environmental Af-
fairs for information on HEW's environmen-
tal statements concerning legislation, regu-
lations, national program proposals or other
major policy issues, and for all requests for
HEW comment on impact statements of
other agencies.

For information with respect to HEW ac-
tions occurring within the jurisdiction of the
Departments' Regional Directors, contact the
appropriate Regional Environmental Officer:

DEPARTMENT OF HOUSING AND URBAN
DEVELOPMENT¹

Director, Office of Community and Environmental Standards, Department of Housing and Urban Development, Room 7206, Washington, D.C. 20410
755-5980

Region VI:

Regional Environmental Officer
U.S. Department of Health, Education and Welfare
1114 Commerce Street
Dallas, Texas 75202 (214) 749-2236

Region VII:

Regional Environmental Officer
U.S. Department of Health, Education and Welfare
601 East 12th Street
Kansas City, Missouri 64106 (816) 374-3584

Region VIII:

Regional Environmental Officer
U.S. Department of Health, Education and Welfare
9017 Federal Building
19th and Stout Streets
Denver, Colorado 80202 (303) 837-4178

Region IX:

Regional Environmental Officer
U.S. Department of Health, Education and Welfare
50 Fulton Street
San Francisco, California 94102 (415) 556-1970

Region X:

Regional Environmental Officer
U.S. Department of Health, Education and Welfare
Arcade Plaza Building
1321 Second Street
Seattle, Washington 98101 (206) 442-0490

¹ Contact the Director with regard to environmental impacts of legislation, policy statements, program regulations and procedures, and precedent-making project decisions. For all other HUD consultation, contact the HUD Regional Administrator in whose jurisdiction the project lies, as follows:

Regional Administrator I.

Environmental Clearance Officer
U.S. Department of Housing and Urban Development
Room 405, John F. Kennedy Federal Building
Boston, Mass. 02203 (617) 223-4066

Regional Administrator II.

Environmental Clearance Officer
U.S. Department of Housing and Urban Development
26 Federal Plaza
New York, New York 10007 (212) 264-8088

Regional Administrator III.

Environmental Clearance Officer
U.S. Department of Housing and Urban Development
Curtis Building, Sixth and Walnut Street
Philadelphia, Pennsylvania 19106 (215) 597-2560

Regional Administrator IV.

Environmental Clearance Officer
U.S. Department of Housing and Urban Development
Peachtree-Seventh Building
Atlanta, Georgia 30323 (404) 526-5585

Regional Administrator V.

Environmental Clearance Officer
U.S. Department of Housing and Urban Development
360 North Michigan Avenue
Chicago, Illinois 60601 (312) 353-5680

DEPARTMENT OF THE INTERIOR¹

Director, Office of Environmental Project Review, Department of the Interior, Interior Building, Washington, D.C. 20240 343-3891

INTERSTATE COMMERCE COMMISSION

Office of Proceedings, Interstate Commerce Commission, Washington, D.C. 20423 343-6167

DEPARTMENT OF LABOR

Assistant Secretary for Occupational Safety and Health, Department of Labor, Washington, D.C. 20210 961-3405

MISSOURI RIVER BASINS COMMISSION

Office of the Chairman, Missouri River Basins Commission, 10050 Regency Circle, Omaha, Nebraska 68114 (402) 397-5714

NATIONAL AERONAUTICS AND
SPACE ADMINISTRATION

Office of the Comptroller, National Aeronautics and Space Administration, Washington, D.C. 20546 755-8440

NATIONAL CAPITAL PLANNING COMMISSION

Office of Environmental Affairs, Office of the Executive Director, National Capital Planning Commission, Washington, D.C. 20576 382-7200

NATIONAL ENDOWMENT FOR THE ARTS

Office of Architecture and Environmental Arts Program, National Endowment for the Arts, Washington, D.C. 20506 382-5765

¹ Requests for comments or information from individual units of the Department of the Interior should be sent to the Office of Environmental Project Review at the address given above.

NEW ENGLAND RIVER BASINS COMMISSION

Office of the Chairman, New England River Basins Commission, 55 Court Street, Boston, Mass. 02108
(617) 223-6244

Regional Administrator VI,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
Federal Office Building, 819 Taylor Street

Fort Worth, Texas 76102 (817) 334-2867

Regional Administrator VII,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
911 Walnut Street
Kansas City, Missouri 64106 (816) 374-2661

Regional Administrator VIII,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
Samsonite Building, 1031 South Broadway
Denver, Colorado 80209 (303) 837-4061

Regional Administrator IX,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
450 Golden Gate Avenue, Post Office Box 36003
San Francisco, California 94102 (415) 556-4752

Regional Administrator X,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
Room 226, Arcade Plaza Building
Seattle, Washington 98101 (206) 583-5415

OFFICE OF ECONOMIC OPPORTUNITY

Office of the Director, Office of Economic Opportunity, 1200 19th Street, N.W., Washington, D.C. 20506
254-6000

OHIO RIVER BASIN COMMISSION

Office of the Chairman, Ohio River Basin Commission, 36 East 4th Street, Suite 208-20, Cincinnati, Ohio 45202
(513) 684-3831

PACIFIC NORTHWEST RIVER BASINS COMMISSION

Office of the Chairman, Pacific Northwest River Basins Commission, 1 Columbia River, Vancouver, Washington 98660
(206) 695-3606

SOURIS-RED-RAINY RIVER BASINS COMMISSION

Office of the Chairman, Souris-Red-Rainy River Basins Commission, Suite 6, Professional Building, Holiday Mall, Moorhead, Minnesota 56560
(701) 237-5227

DEPARTMENT OF STATE

Office of the Special Assistant to the Secretary for Environmental Affairs, Department of State, Washington, D.C. 20520
632-7964

SUSQUEHANNA RIVER BASIN COMMISSION

Office of the Executive Director, Susquehanna River Basin Commission, 5012 Lenker Street, Mechanicsburg, Pa. 17055
(717) 737-0501

TENNESSEE VALLEY AUTHORITY

Office of the Director of Environmental Research and Development, Tennessee Valley Authority, 720 Edney Building, Chattanooga, Tennessee 37401 (615) 755-2002

DEPARTMENT OF TRANSPORTATION *

Director, Office of Environmental Quality,
Office of the Assistant Secretary for Environment, Safety, and Consumer Affairs,
Department of Transportation, Washington, D.C. 20590 426-4357

*Contact the Office of Environmental Quality, Department of Transportation, for information on DOT's environmental statements concerning legislation, regulations, national program proposals, or other major policy issues.

For information regarding the Department of Transportation's other environmental statements, contact the national office for the appropriate administration:

U.S. Coast Guard

Office of Marine Environment and Systems,
U.S. Coast Guard, 400 7th Street, S.W., Washington, D.C. 20590, 426-2007

Federal Aviation Administration

Office of Environmental Quality, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591, 426-8406

Federal Highway Administration

Office of Environmental Policy, Federal Highway Administration, 400 7th Street, S.W., Washington, D.C. 20590, 426-0351

Federal Railroad Administration

Office of Policy and Plans, Federal Railroad Administration, 400 7th Street, S.W., Washington, D.C. 20590, 426-1567

Urban Mass Transportation Administration

Office of Program Operations, Urban Mass Transportation Administration, 400 7th Street, S.W., Washington, D.C. 20590, 426-4020

For other administration's not listed above, contact the Office of Environmental Quality, Department of Transportation, at the address given above.

For comments on other agencies' environmental statements, contact the appropriate administration's regional office. If more than one administration within the Department of Transportation is to be requested to comment, contact the Secretarial Representative in the appropriate Regional Office for coordination of the Department's comments:

SECRETARIAL REPRESENTATIVE

Region I Secretarial Representative, U.S. Department of Transportation, Transportation Systems Center, 55 Broadway, Cambridge, Massachusetts 02142 (617) 494-2709

Region II Secretarial Representative, U.S. Department of Transportation, 26 Federal Plaza, Room 1811, New York, New York 10007 (212) 264-2672

Region III Secretarial Representative, U.S. Department of Transportation, Mall Building, Suite 1214, 325 Chestnut Street, Philadelphia, Pennsylvania 19106 (215) 597-0407

Region IV Secretarial Representative, U.S. Department of Transportation, Suite 515, 1720 Peachtree Rd., N.W. Atlanta, Georgia 30309 (404) 526-3738

Region V Secretarial Representative, U.S. Department of Transportation, 17th Floor, 300 S. Wacker Drive, Chicago, Illinois 60606 (312) 353-4000

Region V Secretarial Representative, U.S. Department of Transportation, 9-C-18 Federal Center, 1100 Commerce Street, Dallas, Texas 75202 (214) 749-1851

Region VII Secretarial Representative, U.S. Department of Transportation, 601 E. 12th Street, Room 634, Kansas City, Missouri 64106 (816) 374-2761

Region VIII Secretarial Representative, U.S. Department of Transportation, Prudential Plaza, Suite 1822, 1050 17th Street, Denver, Colorado 80225 (303) 837-3242

Region IX Secretarial Representative, U.S. Department of Transportation, 450 Golden Gate Avenue, Box 36133, San Francisco, California 94102 (415) 556-5961

Region X Secretarial Representative, U.S. Department of Transportation, 1321 Second Avenue, Room 507, Seattle, Washington 98101 (206) 442-0590

FEDERAL AVIATION ADMINISTRATION

New England Region, Office of the Regional Director, Federal Aviation Administration, 154 Middlesex Street, Burlington, Massachusetts 01803 (617) 272-2356

Eastern Region, Office of the Regional Director, Federal Aviation Administration, Federal Building, JFK International Airport, Jamaica, New York 11430 (212) 998-3333

Southern Region, Office of the Regional Director, Federal Aviation Administration, P.O. Box 20636, Atlanta, Georgia 30626 (404) 526-7222

Great Lakes Region, Office of the Regional Director, Federal Aviation Administration, 2300 East Devon, Des Plaines, Illinois 60018 (312) 694-4500

Southwest Region, Office of the Regional Director, Federal Aviation Administration, P.O. Box 1689, Fort Worth, Texas 76101 (817) 624-4911

Central Region, Office of the Regional Director, Federal Aviation Administration, 601 E. 12th Street, Kansas City, Missouri 64106 (816) 374-5626

Rocky Mountain Region, Office of the Regional Director, Federal Aviation Administration, Park Hill Station, P.O. Box 7213, Denver, Colorado 80207 (303) 837-3646

Western Region, Office of the Regional Director, Federal Aviation Administration, P.O. Box 92007, WorldWay Postal Center, Los Angeles, California 90009 (213) 536-6427

Northwest Region, Office of the Regional Director, Federal Aviation Administration, FAA Building, Boeing Field, Seattle, Washington 98108 (206) 767-2780

FEDERAL HIGHWAY ADMINISTRATION

- Region 1, Regional Administrator, Federal Highway Administration, 4 Normanskill Boulevard, Delmar, New York 12054 (518) 472-6476
- Region 3, Regional Administrator, Federal Highway Administration, Room 1821, George H. Fallon Federal Office Building, 31 Hopkins Plaza, Baltimore, Maryland 21201 (301) 962-2361
- Region 4, Regional Administrator, Federal Highway Administration, Suite 200, 1720 Peachtree Road, N.W., Atlanta, Georgia 30309 (404) 526-5078
- Region 5, Regional Administrator, Federal Highway Administration, Dixie Highway, Homewood, Illinois 60430 (312) 799-6300
- Region 6, Regional Administrator, Federal Highway Administration, 819 Taylor Street, Fort Worth, Texas 76102 (817) 334-3232
- Region 7, Regional Administrator, Federal Highway Administration, P.O. Box 7186, Country Club Station, Kansas City, Missouri 64113 (816) 361-7563
- Region 8, Regional Administrator, Federal Highway Administration, Room 242, Building 40, Denver Federal Center, Denver, Colorado 80225
- Region 9, Regional Administrator, Federal Highway Administration, 450 Golden Gate Avenue, Box 36096, San Francisco, California 94102 (415) 556-3895
- Region 10, Regional Administrator, Federal Highway Administration, Room 412, Mohawk Building, 222 S.W. Morrison Street, Portland, Oregon 97204 (503) 221-2065

URBAN MASS TRANSPORTATION ADMINISTRATION

- Region I, Office of the UMTA Representative, Urban Mass Transportation Administration, Transportation Systems Center, Technology Building, Room 277, 55 Broadway, Boston, Massachusetts 02142 (617) 494-2055
- Region II, Office of the UMTA Representative, Urban Mass Transportation Administration, 26 Federal Plaza, Suite 1809, New York, New York 10007 (212) 264-8162
- Region III, Office of the UMTA Representative, Urban Mass Transportation Administration, Mall Building, Suite 1214, 325 Chestnut Street, Philadelphia, Pennsylvania 19106 (215) 597-0407

Region IV, Office of UMTA Representative, Urban Mass Transportation Administration, 1720 Peachtree Road, Northwest, Suite 501, Atlanta, Georgia 30309 (404) 526-3948

Region V, Office of the UMTA Representative, Urban Mass Transportation Administration, 300 South Wacker Drive, Suite 700, Chicago, Illinois 60606 (312) 353-6005

Region VI, Office of the UMTA Representative, Urban Mass Transportation Administration, Federal Center, Suite 9E24, 1100 Commerce Street, Dallas, Texas 75202 (214) 749-7322

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PART II



COUNCIL ON ENVIRONMENTAL QUALITY

■

PREPARATION OF ENVIRONMENTAL IMPACT STATEMENTS

Guidelines

ORDER

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Title 40—Protection of the Environment

CHAPTER V—COUNCIL ON ENVIRONMENTAL QUALITY

PART 1500—PREPARATION OF ENVIRONMENTAL IMPACT STATEMENTS: GUIDELINES

On May 2, 1973, the Council on Environmental Quality published in the *Federal Register*, for public comment, a proposed revision of its guidelines for the preparation of environmental impact statements. Pursuant to the National Environmental Policy Act (P.L. 91-190, 42 U.S.C. 4321 et seq.) and Executive Order 11514 (35 FR 4247) all Federal departments, agencies, and establishments are required to prepare such statements in connection with their proposals for legislation and other major Federal actions significantly affecting the quality of the human environment. The authority for the Council's guidelines is set forth below in § 1500.1. The specific policies to be implemented by the guidelines is set forth below in § 1500.2.

The Council received numerous comments on its proposed guidelines from environmental groups, Federal, State, and local agencies, industry, and private individuals. Two general themes were presented in the majority of the comments. First, the Council should increase the opportunity for public involvement in the impact statement process. Second, the Council should provide more detailed guidance on the responsibilities of Federal agencies in light of recent court decisions interpreting the Act. The proposed guidelines have been revised in light of the specific comments relating to these general themes, as well as other comments received, and are now being issued in final form.

The guidelines will appear in the Code of Federal Regulations in Title 40, Chapter V, at Part 1500. They are being codified, in part, because they affect State and local governmental agencies, environmental groups, industry, and private individuals, in addition to Federal agencies, to which they are specifically directed, and the resultant need to make them widely and readily available.

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AUTHORITY: National Environmental Policy Act (P.L. 91-190, 42 U.S.C. 4321 et seq.) and Executive Order 11514.

§ 1500.1 Purpose and authority.

(a) This directive provides guidelines to Federal departments, agencies, and establishments for preparing detailed environmental statements on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment as required by section 102(2)(C) of the National Environmental Policy Act (P.L. 91-190, 42 U.S.C. 4321 et seq.) (hereafter "the Act"). Underlying the preparation of such environmental statements is the mandate of both the Act and Executive Order 11514 (35 FR 4247) of March 5, 1970, that all Federal agencies, to the fullest extent possible, direct their policies, plans and programs to protect and enhance environmental quality. Agencies are required to view their actions in a manner calculated to encourage productive and enjoyable harmony between man and his environment, to promote efforts preventing or eliminating damage to the environment and biosphere and stimulating the health and welfare of man, and to enrich the understanding of the ecological systems and natural resources important to the Nation. The objective of section 102(2)(C) of the Act and of these guidelines is to assist agencies in implementing these policies. This requires agencies to build into their decisionmaking process, beginning at the earliest possible point, an appropriate and careful consideration of the environmental aspects of proposed action in order that adverse environmental effects may be avoided or minimized and environmental quality previously lost may be restored. This directive also provides guidance to Federal, State, and local agencies and the public in commenting on statements prepared under these guidelines.

(b) Pursuant to section 204(3) of the Act the Council on Environmental Quality (hereafter "the Council") is assigned the duty and function of reviewing and appraising the programs and activities of the Federal Government, in the light of the Act's policy, for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto. Section 102(2)(B) of the Act directs all Federal agencies to identify and develop methods and procedures, in consultation with the Council, to insure that unquantified environmental values be given appropriate con-

sideration in decisionmaking along with economic and technical considerations; section 102(2)(C) of the Act directs that copies of all environmental impact statements be filed with the Council; and section 102(2)(H) directs all Federal agencies to assist the Council in the performance of its functions. These provisions have been supplemented in sections 3(h) and (i) of Executive Order 11514 by directions that the Council issue guidelines to Federal agencies for preparation of environmental impact statements and such other instructions to agencies and requests for reports and information as may be required to carry out the Council's responsibilities under the Act.

§ 1500.2 Policy.

(a) As early as possible and in all cases prior to agency decision concerning recommendations or favorable reports on proposals for (1) legislation significantly affecting the quality of the human environment (see §§ 1500.5(i) and 1500.12) (hereafter "legislative actions") and (2) all other major Federal actions significantly affecting the quality of the human environment (hereafter "administrative actions"), Federal agencies will, in consultation with other appropriate Federal, State and local agencies and the public assess in detail the potential environmental impact.

(b) Initial assessments of the environmental impacts of proposed action should be undertaken concurrently with initial technical and economic studies and, where required, a draft environmental impact statement prepared and circulated for comment in time to accompany the proposal through the existing agency review processes for such action. In this process, Federal agencies shall: (1) Provide for circulation of draft environmental statements to other Federal, State, and local agencies and for their availability to the public in accordance with the provisions of these guidelines; (2) consider the comments of the agencies and the public; and (3) issue final environmental impact statements responsive to the comments received. The purpose of this assessment and consultation process is to provide agencies and other decisionmakers as well as members of the public with an understanding of the potential environmental effects of proposed actions, to avoid or minimize adverse effects wherever possible, and to restore or enhance environmental quality to the fullest extent practicable. In particular, agencies should use the environmental impact statement process to explore alternative actions that will avoid or minimize adverse impacts and to evaluate both the long- and short-range implications of proposed actions to man, his physical and social surroundings, and to nature. Agencies should consider the results of their environmental assessments along with their assessments of the net economic, technical and other benefits of proposed actions and use all practicable means, consistent with other essential considerations of national policy, to restore environmental quality as well as to avoid or minimize undesirable consequences for the environment.

§ 1500.3 Agency and OMB procedures.

(a) Pursuant to section 2(f) of Executive Order 11514, the heads of Federal agencies have been directed to proceed with measures required by section 102 (2)(C) of the Act. Previous guidelines of the Council directed each agency to establish its own formal procedures for (1) identifying those agency actions requiring environmental statements, the appropriate time prior to decision for the consultations required by section 102 (2)(C) and the agency review process for which environmental statements are to be available, (2) obtaining information required in their preparation, (3) designating the officials who are to be responsible for the statements, (4) consulting with and taking account of the comments of appropriate Federal, State and local agencies and the public, including obtaining the comment of the Administrator of the Environmental Protection Agency when required under section 309 of the Clean Air Act, as amended, and (5) meeting the requirements of section 2(b) of Executive Order 11514 for providing timely public information on Federal plans and programs with environmental impact. Each agency, including both departmental and sub-departmental components having such procedures, shall review its procedures and shall revise them, in consultation with the Council, as may be necessary in order to respond to requirements imposed by these revised guidelines as well as by such previous directives. After such consultation, proposed revisions of such agency procedures shall be published in the FEDERAL REGISTER no later than October 30, 1973. A minimum 45-day period for public comment shall be provided, followed by publication of final procedures no later than forty-five (45) days after the conclusion of the comment period. Each agency shall submit seven (7) copies of all such procedures to the Council. Any future revision of such agency procedures shall similarly be proposed and adopted only after prior consultation with the Council and, in the case of substantial revision, opportunity for public comment. All revisions shall be published in the FEDERAL REGISTER.

(b) Each Federal agency should consult, with the assistance of the Council and the Office of Management and Budget if desired, with other appropriate Federal agencies in the development and revision of the above procedures so as to achieve consistency in dealing with similar activities and to assure effective coordination among agencies in their review of proposed activities. Where applicable, State and local review of such agency procedures should be conducted pursuant to procedures established by Office of Management and Budget Circular No. A-85.

(c) Existing mechanisms for obtaining the views of Federal, State, and local agencies on proposed Federal actions should be utilized to the maximum extent practicable in dealing with environmental matters. The Office of Management and Budget will issue instructions,

as necessary, to take full advantage of such existing mechanisms.

§ 1500.4 Federal agencies included; effect of the Act on existing agency mandates.

(a) Section 102(2)(C) of the Act applies to all agencies of the Federal Government. Section 102 of the Act provides that "to the fullest extent possible: (1) The policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act," and section 105 of the Act provides that "the policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies." This means that each agency shall interpret the provisions of the Act as a supplement to its existing authority and as a mandate to view traditional policies and missions in the light of the Act's national environmental objectives. In accordance with this purpose, agencies should continue to review their policies, procedures, and regulations and to revise them as necessary to ensure full compliance with the purposes and provisions of the Act. The phrase "to the fullest extent possible" in section 102 is meant to make clear that each agency of the Federal Government shall comply with that section unless existing law applicable to the agency's operations expressly prohibits or makes compliance impossible.

§ 1500.5 Types of actions covered by the Act.

(a) "Actions" include but are not limited to:

(1) Recommendations or favorable reports relating to legislation including requests for appropriations. The requirement for following the section 102 (2)(C) procedure as elaborated in these guidelines applies to both (i) agency recommendations on their own proposals for legislation (see § 1500.12); and (ii) agency reports on legislation initiated elsewhere. In the latter case only the agency which has primary responsibility for the subject matter involved will prepare an environmental statement.

(2) New and continuing projects and program activities: directly undertaken by Federal agencies; or supported in whole or in part through Federal contracts, grants, subsidies, loans, or other forms of funding assistance (except where such assistance is solely in the form of general revenue sharing funds, distributed under the State and Local Fiscal Assistance Act of 1972, 31 U.S.C. 1221 et. seq. with no Federal agency control over the subsequent use of such funds); or involving a Federal lease, permit, license certificate or other entitlement for use.

(3) The making, modification, or establishment of regulations, rules, procedures, and policy.

§ 1500.6 Identifying major actions significantly affecting the environment.

(a) The statutory clause "major Federal actions significantly affecting the quality of the human environment" is to

be construed by agencies with a view to the overall, cumulative impact of the action proposed, related Federal actions and projects in the area, and further actions contemplated. Such actions may be localized in their impact, but if there is potential that the environment may be significantly affected, the statement is to be prepared. Proposed major actions, the environmental impact of which is likely to be highly controversial, should be covered in all cases. In considering what constitutes major action significantly affecting the environment, agencies should bear in mind that the effect of many Federal decisions about a project or complex of projects can be individually limited but cumulatively considerable. This can occur when one or more agencies over a period of years puts into a project individually minor but collectively major resources, when one decision involving a limited amount of money is a precedent for action in much larger cases or represents a decision in principle about a future major course of action, or when several Government agencies individually make decisions about partial aspects of a major action. In all such cases, an environmental statement should be prepared if it is reasonable to anticipate a cumulatively significant impact on the environment from Federal action. The Council, on the basis of a written assessment of the impacts involved, is available to assist agencies in determining whether specific actions require impact statements.

(b) Section 101(b) of the Act indicates the broad range of aspects of the environment to be surveyed in any assessment of significant effect. The Act also indicates that adverse significant effects include those that degrade the quality of the environment, curtail the range of beneficial uses of the environment, and serve short-term, to the disadvantage of long-term, environmental goals. Significant effects can also include actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial. Significant effects also include secondary effects, as described more fully, for example, in § 1500.8(a) (iii) (B). The significance of a proposed action may also vary with the setting, with the result that an action that would have little impact in an urban area may be significant in a rural setting or vice versa. While a precise definition of environmental "significance," valid in all contexts, is not possible, effects to be considered in assessing significance include, but are not limited to, those outlined in Appendix II of these guidelines.

(c) Each of the provisions of the Act, except section 102(2)(C), applies to all Federal agency actions. Section 102(2)(C) requires the preparation of a detailed environmental impact statement in the case of "major Federal actions significantly affecting the quality of the human environment." The identification of major actions significantly affecting the environment is the responsibility of each Federal agency, to be carried out against the background of its own particular operations. The action must be a (1)

"major" action, (2) which is a "Federal action," (3) which has a "significant" effect, and (4) which involves the "quality of the human environment." The words "major" and "significantly" are intended to imply thresholds of importance and impact that must be met before a statement is required. The action causing the impact must also be one where there is sufficient Federal control and responsibility to constitute "Federal action" in contrast to cases where such Federal control and responsibility are not present as, for example, when Federal funds are distributed in the form of general revenue sharing to be used by State and local governments (see § 1500.5(ii)). Finally, the action must be one that significantly affects the quality of the human environment either by directly affecting human beings or by indirectly affecting human beings through adverse effects on the environment. Each agency should review the typical classes of actions that it undertakes and, in consultation with the Council, should develop specific criteria and methods for identifying those actions likely to require environmental statements and those actions likely not to require environmental statements. Normally this will involve:

(i) Making an initial assessment of the environmental impacts typically associated with principal types of agency action.

(ii) Identifying on the basis of this assessment, types of actions which normally do, and types of actions which normally do not, require statements.

(iii) With respect to remaining actions that may require statements depending on the circumstances, and those actions determined under the preceding paragraph (C)(4)(ii) of this section as likely to require statements, identifying: (a) what basic information needs to be gathered; (b) how and when such information is to be assembled and analyzed; and (c) on what bases environmental assessments and decisions to prepare impact statements will be made. Agencies may either include this substantive guidance in the procedures issued pursuant to § 1500.3(a) of these guidelines, or issue such guidance as supplemental instructions to aid relevant agency personnel in implementing the impact statement process. Pursuant to § 1500.14 of these guidelines, agencies shall report to the Council by June 30, 1974, on the progress made in developing such substantive guidance.

(d) (1) Agencies should give careful attention to identifying and defining the purpose and scope of the action which would most appropriately serve as the subject of the statement. In many cases, broad program statements will be required in order to assess the environmental effects of a number of individual actions on a given geographical area (e.g., coal leases), or environmental impacts that are generic or common to a series of agency actions (e.g., maintenance or waste handling practices), or the overall impact of a large-scale program or chain of contemplated projects (e.g., major lengths of highway as opposed to

small segments). Subsequent statements on major individual actions will be necessary where such actions have significant environmental impacts not adequately evaluated in the program statement.

(2) Agencies engaging in major technology research and development programs should develop procedures for periodic evaluation to determine when a program statement is required for such programs. Factors to be considered in making this determination include the magnitude of Federal investment in the program, the likelihood of widespread application of the technology, the degree of environmental impact which would occur if the technology were widely applied, and the extent to which continued investment in the new technology is likely to restrict future alternatives. Statements must be written late enough in the development process to contain meaningful information, but early enough so that this information can practically serve as an input in the decision-making process. Where it is anticipated that a statement may ultimately be required but that its preparation is still premature, the agency should prepare an evaluation briefly setting forth the reasons for its determination that a statement is not yet necessary. This evaluation should be periodically updated, particularly when significant new information becomes available concerning the potential environmental impact of the program. In any case, a statement must be prepared before research activities have reached a stage of investment or commitment to implementation likely to determine subsequent development or restrict later alternatives. Statements on technology research and development programs should include an analysis not only of alternative forms of the same technology that might reduce any adverse environmental impacts but also of alternative technologies that would serve the same function as the technology under consideration. Efforts should be made to involve other Federal agencies and interested groups with relevant expertise in the preparation of such statements because the impacts and alternatives to be considered are likely to be less well defined than in other types of statements.

(e) In accordance with the policy of the Act and Executive Order 11514 agencies have a responsibility to develop procedures to insure the fullest practicable provision of timely public information and understanding of Federal plans and programs with environmental impact in order to obtain the views of interested parties. In furtherance of this policy, agency procedures should include an appropriate early notice system for informing the public of the decision to prepare a draft environmental statement on proposed administrative actions (and for soliciting comments that may be helpful in preparing the statement) as soon as is practicable after the decision to prepare the statement is made. In this connection, agencies should: (1) maintain a list of administrative actions for which en-

vironmental statements are being prepared; (2) revise the list at regular intervals specified in the agency's procedures developed pursuant to § 1500.3(a) of these guidelines (but not less than quarterly) and transmit each such revision to the Council; and (3) make the list available for public inspection on request. The Council will periodically publish such lists in the FEDERAL REGISTER. If an agency decides that an environmental statement is not necessary for a proposed action (i) which the agency has identified pursuant to § 1500.6(c)(4)(ii) as normally requiring preparation of a statement, (ii) which is similar to actions for which the agency has prepared a significant number of statements, (iii) which the agency has previously announced would be the subject of a statement, or (iv) for which the agency has made a negative determination in response to a request from the Council pursuant to § 1500.11(f), the agency shall prepare a publicly available record briefly setting forth the agency's decision and the reasons for that determination. Lists of such negative determinations, and any evaluations made pursuant to § 1500.6 which conclude that preparation of a statement is not yet timely, shall be prepared and made available in the same manner as provided in this subsection for lists of statements under preparation.

§ 1500.7 Preparing draft environmental statements; public hearings.

(a) Each environmental impact statement shall be prepared and circulated in draft form for comment in accordance with the provisions of these guidelines. The draft statement must fulfill and satisfy to the fullest extent possible at the time the draft is prepared the requirements established for final statements by section 102(2)(C). (Where an agency has an established practice of declining to favor an alternative until public comments on a proposed action have been received, the draft environmental statement may indicate that two or more alternatives are under consideration.) Comments received shall be carefully evaluated and considered in the decision process. A final statement with substantive comments attached shall then be issued and circulated in accordance with applicable provisions of §§ 1500.10, 1500.11, or 1500.12. It is important that draft environmental statements be prepared and circulated for comment and furnished to the Council as early as possible in the agency review process in order to permit agency decisionmakers and outside reviewers to give meaningful consideration to the environmental issues involved. In particular, agencies should keep in mind that such statements are to serve as the means of assessing the environmental impact of proposed agency actions, rather than as a justification for decisions already made. This means that draft statements on administrative actions should be prepared and circulated for comment prior to the first significant point of decision in the agency review process. For major categories of agency action, this point should be identified in the procedures is-

sued pursuant to § 1500.3(a). For major categories of projects involving an applicant and identified pursuant to § 1500.6 (c)(c)(ii) as normally requiring the preparation of a statement, agencies should include in their procedures provisions limiting actions which an applicant is permitted to take prior to completion and review of the final statement with respect to his application.

(b) Where more than one agency (1) directly sponsors an action, or is directly involved in an action through funding, licenses, or permits, or (2) is involved in a group of actions directly related to each other because of their functional interdependence and geographical proximity, consideration should be given to preparing one statement for all the Federal actions involved (see § 1500.6(d)(1)). Agencies in such cases should consider the possibility of joint preparation of a statement by all agencies concerned, or designation of a single "lead agency" to assume supervisory responsibility for preparation of the statement. Where a lead agency prepares the statement, the other agencies involved should provide assistance with respect to their areas of jurisdiction and expertise. In either case, the statement should contain an environmental assessment of the full range of Federal actions involved, should reflect the views of all participating agencies, and should be prepared before major or irreversible actions have been taken by any of the participating agencies. Factors relevant in determining an appropriate lead agency include the time sequence in which the agencies become involved, the magnitude of their respective involvement, and their relative expertise with respect to the project's environmental effects. As necessary, the Council will assist in resolving questions of responsibility for statement preparation in the case of multi-agency actions. Federal Regional Councils, agencies and the public are encouraged to bring to the attention of the Council and other relevant agencies appropriate situations where a geographic or regionally focused statement would be desirable because of the cumulative environmental effects likely to result from multi-agency actions in the area.

(c) Where an agency relies on an applicant to submit initial environmental information, the agency should assist the applicant by outlining the types of information required. In all cases, the agency should make its own evaluation of the environmental issues and take responsibility for the scope and content of draft and final environmental statements.

(d) Agency procedures developed pursuant to § 1500.3(a) of these guidelines should indicate as explicitly as possible those types of agency decisions or actions which utilize hearings as part of the normal agency review process, either as a result of statutory requirement or agency practice. To the fullest extent possible, all such hearings shall include consideration of the environmental aspects of the proposed action. Agency procedures shall also specifically include provision for public hearings on major actions with

environmental impact, whenever appropriate, and for providing the public with relevant information, including information on alternative courses of action. In deciding whether a public hearing is appropriate, an agency should consider: (1) The magnitude of the proposal in terms of economic costs, the geographic area involved, and the uniqueness or size of commitment of the resources involved; (2) the degree of interest in the proposal, as evidenced by requests from the public and from Federal, State and local authorities that a hearing be held; (3) the complexity of the issue and the likelihood that information will be presented at the hearing which will be of assistance to the agency in fulfilling its responsibilities under the Act; and (4) the extent to which public involvement already has been achieved through other means, such as earlier public hearings, meetings with citizen representatives, and/or written comments on the proposed action. Agencies should make any draft environmental statements to be issued available to the public at least fifteen (15) days prior to the time of such hearings.

§ 1500.8 Content of environmental statements.

(a) The following points are to be covered:

(1) A description of the proposed action, a statement of its purposes, and a description of the environment affected, including information, summary technical data, and maps and diagrams where relevant, adequate to permit an assessment of potential environmental impact by commenting agencies and the public. Highly technical and specialized analyses and data should be avoided in the body of the draft impact statement. Such materials should be attached as appendices or footnoted with adequate bibliographic references. The statement should also succinctly describe the environment of the area affected as it exists prior to a proposed action, including other Federal activities in the area affected by the proposed action which are related to the proposed action. The interrelationships and cumulative environmental impacts of the proposed action and other related Federal projects shall be presented in the statement. The amount of detail provided in such descriptions should be commensurate with the extent and expected impact of the action, and with the amount of information required at the particular level of decisionmaking (planning, feasibility, design, etc.). In order to ensure accurate descriptions and environmental assessments, site visits should be made where feasible. Agencies should also take care to identify, as appropriate, population and growth characteristics of the affected area and any population and growth assumptions used to justify the project or program or to determine secondary population and growth impacts resulting from the proposed action and its alternatives (see paragraph (a)(1)(3)(ii), of this section). In discussing these population aspects, agencies should give consideration to using the rates of growth in the

region of the project contained in the projection compiled for the Water Resources Council by the Bureau of Economic Analysis of the Department of Commerce and the Economic Research Service of the Department of Agriculture (the "OBERS" projection). In any event it is essential that the sources of data used to identify, quantify or evaluate any and all environmental consequences be expressly noted.

(2) The relationship of the proposed action to land use plans, policies, and controls for the affected area. This requires a discussion of how the proposed action may conform or conflict with the objectives and specific terms of approved or proposed Federal, State, and local land use plans, policies, and controls, if any, for the area affected including those developed in response to the Clean Air Act or the Federal Water Pollution Control Act Amendments of 1972. Where a conflict or inconsistency exists, the statement should describe the extent to which the agency has reconciled its proposed action with the plan, policy or control, and the reasons why the agency has decided to proceed notwithstanding the absence of full reconciliation.

(3) The probable impact of the proposed action on the environment.

(i) This requires agencies to assess the positive and negative effects of the proposed action as it affects both the national and international environment. The attention given to different environmental factors will vary according to the nature, scale, and location of proposed actions. Among factors to consider should be the potential effect of the action on such aspects of the environment as those listed in Appendix II of these guidelines. Primary attention should be given in the statement to discussing those factors most evidently impacted by the proposed action.

(ii) Secondary or indirect, as well as primary or direct, consequences for the environment should be included in the analysis. Many major Federal actions, in particular those that involve the construction or licensing of infrastructure investments (e.g., highways, airports, sewer systems, water resource projects, etc.), stimulate or induce secondary effects in the form of associated investments and changed patterns of social and economic activities. Such secondary effects, through their impacts on existing community facilities and activities, through inducing new facilities and activities, or through changes in natural conditions, may often be even more substantial than the primary effects of the original action itself. For example, the effects of the proposed action on population and growth may be among the more significant secondary effects. Such population and growth impacts should be estimated if expected to be significant (using data identified as indicated in § 1500.8(a)(1)) and an assessment made of the effect of any possible change in population patterns or growth upon the resource base, including land use, water, and public services, of the area in question.

(4) Alternatives to the proposed action, including, where relevant, those not within the existing authority of the responsible agency. (Section 102(2)(D) of the Act requires the responsible agency to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources"). A rigorous exploration and objective evaluation of the environmental impacts of all reasonable alternative actions, particularly those that might enhance environmental quality or avoid some or all of the adverse environmental effects, is essential. Sufficient analysis of such alternatives and their environmental benefits, costs and risks should accompany the proposed action through the agency review process in order not to foreclose prematurely options which might enhance environmental quality or have less detrimental effects. Examples of such alternatives include: the alternative of taking no action or of postponing action pending further study; alternatives requiring actions of a significantly different nature which would provide similar benefits with different environmental impacts (e.g., nonstructural alternatives to flood control programs, or mass transit alternatives to highway construction); alternatives related to different designs or details of the proposed action which would present different environmental impacts (e.g., cooling ponds vs. cooling towers for a power plant or alternatives that will significantly conserve energy); alternative measures to provide for compensation of fish and wildlife losses, including the acquisition of land, waters, and interests therein. In each case, the analysis should be sufficiently detailed to reveal the agency's comparative evaluation of the environmental benefits, costs and risks of the proposed action and each reasonable alternative. Where an existing impact statement already contains such an analysis, its treatment of alternatives may be incorporated provided that such treatment is current and relevant to the precise purpose of the proposed action.

(5.) Any probable adverse environmental effects which cannot be avoided (such as water or air pollution, undesirable land use patterns, damage to life systems, urban congestion, threats to health or other consequences adverse to the environmental goals set out in section 101 (b) of the Act). This should be a brief section summarizing in one place those effects discussed in paragraph (a)(3) of this section that are adverse and unavoidable under the proposed action. Included for purposes of contrast should be a clear statement of how other avoidable adverse effects discussed in paragraph (a)(2) of this section will be mitigated.

(6) The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity. This section should contain a brief discussion of the extent to which the proposed action involves tradeoffs between short-term en-

vironmental gains at the expense of long-term losses, or vice versa, and a discussion of the extent to which the proposed action forecloses future options. In this context short-term and long-term do not refer to any fixed time periods, but should be viewed in terms of the environmentally significant consequences of the proposed action.

(7) Any irreversible and irretrievable commitments of resources that would be involved in the proposed action should it be implemented. This requires the agency to identify from its survey of unavoidable impacts in paragraph (a)(5) of this section the extent to which the action irreversibly curtails the range of potential uses of the environment. Agencies should avoid construing the term "resources" to mean only the labor and materials devoted to an action. "Resources" also means the natural and cultural resources committed to loss or destruction by the action.

(8) An indication of what other interests and considerations of Federal policy are thought to offset the adverse environmental effects of the proposed action identified pursuant to paragraphs (a)(3) and (5) of this section. The statement should also indicate the extent to which these stated countervailing benefits could be realized by following reasonable alternatives to the proposed action (as identified in paragraph (a)(4) of this section) that would avoid some or all of the adverse environmental effects. In this connection, agencies that prepare cost-benefit analyses of proposed actions should attach such analyses, or summaries thereof, to the environmental impact statement, and should clearly indicate the extent to which environmental costs have not been reflected in such analyses.

(b) In developing the above points agencies should make every effort to convey the required information succinctly in a form easily understood, both by members of the public and by public decisionmakers, giving attention to the substance of the information conveyed rather than to the particular form, or length, or detail of the statement. Each of the above points, for example, need not always occupy a distinct section of the statement if it is otherwise adequately covered in discussing the impact of the proposed action and its alternatives—which items should normally be the focus of the statement. Draft statements should indicate at appropriate points in the text any underlying studies, reports, and other information obtained and considered by the agency in preparing the statement including any cost-benefit analyses prepared by the agency, and reports of consulting agencies under the Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq., and the National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq., where such consultation has taken place. In the case of documents not likely to be easily accessible (such as internal studies or reports), the agency should indicate how such information may be obtained. If such information is attached to the

statement, care should be taken to ensure that the statement remains an essentially self-contained instrument, capable of being understood by the reader without the need for undue cross reference.

(c) Each environmental statement should be prepared in accordance with the precept in section 102(2)(A) of the Act that all agencies of the Federal Government "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decisionmaking which may have an impact on man's environment." Agencies should attempt to have relevant disciplines represented on their own staffs; where this is not feasible they should make appropriate use of relevant Federal, State, and local agencies or the professional services of universities and outside consultants. The interdisciplinary approach should not be limited to the preparation of the environmental impact statement, but should also be used in the early planning stages of the proposed action. Early application of such an approach should help assure a systematic evaluation of reasonable alternative courses of action and their potential social, economic, and environmental consequences.

(d) Appendix I prescribes the form of the summary sheet which should accompany each draft and final environmental statement.

§ 1500.9 Review of draft environmental statements by Federal, Federal-State, State, and local agencies and by the public.

(a) *Federal agency review.* (1) *In general.* A Federal agency considering an action requiring an environmental statement should consult with, and (on the basis of a draft environmental statement for which the agency takes responsibility) obtain the comment on the environmental impact of the action of Federal and Federal-State agencies with jurisdiction by law or special expertise with respect to any environmental impact involved. These Federal and Federal-State agencies and their relevant areas of expertise include those identified in Appendices II and III to these guidelines. It is recommended that the listed departments and agencies establish contact points, which may be regional offices, for providing comments on the environmental statements. The requirement in section 102(2)(C) to obtain comment from Federal agencies having jurisdiction or special expertise is in addition to any specific statutory obligation of any Federal agency to coordinate or consult with any other Federal or State agency. Agencies should, for example, be alert to consultation requirements of the Fish and Wildlife Coordination Act, 16 U.S.C. 661 et seq., and the National Historic Preservation Act of 1966, 16 U.S.C. 470 et seq. To the extent possible, statements or findings concerning environmental impact required by other statutes, such as section 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. 1653(f), or

section 106 of the National Historic Preservation Act of 1966, should be combined with compliance with the environmental impact statement requirements of section 102(2)(C) of the Act to yield a single document which meets all applicable requirements. The Advisory Council on Historic Preservation, the Department of Transportation, and the Department of the Interior, in consultation with the Council, will issue any necessary supplementing instructions for furnishing information or findings not forthcoming under the environmental impact statement process.

(b) *EPA review.* Section 309 of the Clean Air Act, as amended (42 U.S.C. § 1857h-7), provides that the Administrator of the Environmental Protection Agency shall comment in writing on the environmental impact of any matter relating to his duties and responsibilities, and shall refer to the Council any matter that the Administrator determines is unsatisfactory from the standpoint of public health or welfare or environmental quality. Accordingly, wherever an agency action related to air or water quality, noise abatement and control, pesticide regulation, solid waste disposal, generally applicable environmental radiation criteria and standards, or other provision of the authority of the Administrator is involved, Federal agencies are required to submit such proposed actions and their environmental impact statements, if such have been prepared, to the Administrator for review and comment in writing. In all cases where EPA determines that proposed agency action is environmentally unsatisfactory, or where EPA determines that an environmental statement is so inadequate that such a determination cannot be made, EPA shall publish its determination and notify the Council as soon as practicable. The Administrator's comments shall constitute his comments for the purposes of both section 309 of the Clean Air Act and section 102(2)(C) of the National Environmental Policy Act.

(c) *State and local review.* Office of Management and Budget Circular No. A-95 (Revised) through its system of State and areawide clearinghouses provides a means for securing the views of State and local environmental agencies, which can assist in the preparation and review of environmental impact statements. Current instructions for obtaining the views of such agencies are contained in the joint OMB-CEQ memorandum attached to these guidelines as Appendix IV. A current listing of clearinghouses is issued periodically by the Office of Management and Budget.

(d) *Public review.* The procedures established by these guidelines are designed to encourage public participation in the impact statement process at the earliest possible time. Agency procedures should make provision for facilitating the comment of public and private organizations and individuals by announcing the availability of draft environmental statements and by making copies available to organizations and individuals that request an opportunity to comment.

Agencies should devise methods for publicizing the existence of draft statements, for example, by publication of notices in local newspapers or by maintaining a list of groups, including relevant conservation commissions, known to be interested in the agency's activities and directly notifying such groups of the existence of a draft statement, or sending them a copy, as soon as it has been prepared. A copy of the draft statement should in all cases be sent to any applicant whose project is the subject of the statement. Materials to be made available to the public shall be provided without charge to the extent practicable, or at a fee which is not more than the actual cost of reproducing copies required to be sent to other Federal agencies, including the Council.

(e) *Responsibilities of commenting entities.* (1) Agencies and members of the public submitting comments on proposed actions on the basis of draft environmental statements should endeavor to make their comments as specific, substantive, and factual as possible without undue attention to matters of form in the impact statement. Although the comments need not conform to any particular format, it would assist agencies reviewing comments if the comments were organized in a manner consistent with the structure of the draft statement. Emphasis should be placed on the assessment of the environmental impacts of the proposed action, and the acceptability of those impacts on the quality of the environment, particularly as contrasted with the impacts of reasonable alternatives to the action. Commenting entities may recommend modifications to the proposed action and/or new alternatives that will enhance environmental quality and avoid or minimize adverse environmental impacts.

(2) Commenting agencies should indicate whether any of their projects not identified in the draft statement are sufficiently advanced in planning and related environmentally to the proposed action so that a discussion of the environmental interrelationships should be included in the final statement (see § 1500.8(a)(1)). The Council is available to assist agencies in making such determinations.

(3) Agencies and members of the public should indicate in their comments the nature of any monitoring of the environmental effects of the proposed project that appears particularly appropriate. Such monitoring may be necessary during the construction, startup, or operation phases of the project. Agencies with special expertise with respect to the environmental impacts involved are encouraged to assist the sponsoring agency in the establishment and operation of appropriate environmental monitoring.

(f) Agencies seeking comment shall establish time limits of not less than forty-five (45) days for reply, after which it may be presumed, unless the agency or party consulted requests a specified extension of time, that the agency or party consulted has no comment to make. Agencies seeking comment should en-

deavor to comply with requests for extensions of time of up to fifteen (15) days. In determining an appropriate period for comment, agencies should consider the magnitude and complexity of the statement and the extent of citizen interest in the proposed action.

§ 1500.10 Preparation and circulation of final environmental statements.

(a) Agencies should make every effort to discover and discuss all major points of view on the environmental effects of the proposed action and its alternatives in the draft statement itself. However, where opposing professional views and responsible opinion have been overlooked in the draft statement and are brought to the agency's attention through the commenting process, the agency should review the environmental effects of the action in light of those views and should make a meaningful reference in the final statement to the existence of any responsible opposing view not adequately discussed in the draft statement, indicating the agency's response to the issues raised. All substantive comments received on the draft (or summaries thereof where response has been exceptionally voluminous) should be attached to the final statement, whether or not each such comment is thought to merit individual discussion by the agency in the text of the statement.

(b) Copies of final statements, with comments attached, shall be sent to all Federal, State, and local agencies and private organizations that made substantive comments on the draft statement and to individuals who requested a copy of the final statement, as well as any applicant whose project is the subject of the statement. Copies of final statements shall in all cases be sent to the Environmental Protection Agency to assist it in carrying out its responsibilities under section 309 of the Clean Air Act. Where the number of comments on a draft statement is such that distribution of the final statement to all commenting entities appears impracticable, the agency shall consult with the Council concerning alternative arrangements for distribution of the statement.

§ 1500.11 Transmittal of statements to the Council; minimum periods for review; requests by the Council.

(a) As soon as they have been prepared, ten (10) copies of draft environmental statements, five (5) copies of all comments made thereon (to be forwarded to the Council by the entity making comment at the time comment is forwarded to the responsible agency), and ten (10) copies of the final text of environmental statements (together with the substance of all comments received by the responsible agency from Federal, State, and local agencies and from private organizations and individuals) shall be supplied to the Council. This will serve to meet the statutory requirement to make environmental statements available to the President. At the same time that copies of draft and final statements are sent to the Council, copies should also be sent to relevant commenting en-

titles as set forth in §§ 1500.9 and 1500.10(b) of these guidelines.

(b) To the maximum extent practicable no administrative action subject to section 102(2)(C) is to be taken sooner than ninety (90) days after a draft environmental statement has been circulated for comment, furnished to the Council and, except where advance public disclosure will result in significantly increased costs of procurement to the Government, made available to the public pursuant to these guidelines; neither should such administrative action be taken sooner than thirty (30) days after the final text of an environmental statement (together with comments) has been made available to the Council, commenting agencies, and the public. In all cases, agencies should allot a sufficient review period for the final statement so as to comply with the statutory requirement that the "statement and the comments and views of appropriate Federal, State, and local agencies . . . accompany the proposal through the existing agency review processes." If the final text of an environmental statement is filed within ninety (90) days after a draft statement has been circulated for comment, furnished to the Council and made public pursuant to this section of these guidelines, the minimum thirty (30) day period and the ninety (90) day period may run concurrently to the extent that they overlap. An agency may at any time supplement or amend a draft or final environmental statement, particularly when substantial changes are made in the proposed action, or significant new information becomes available concerning its environmental aspects. In such cases the agency should consult with the Council with respect to the possible need for or desirability of recirculation of the statement for the appropriate period.

(c) The Council will publish weekly in the FEDERAL REGISTER lists of environmental statements received during the preceding week that are available for public comment. The date of publication of such lists shall be the date from which the minimum periods for review and advance availability of statements shall be calculated.

(d) The Council's publication of notice of the availability of statements is in addition to the agency's responsibility, as described in § 1500.9(d) of these guidelines, to insure the fullest practicable provision of timely public information concerning the existence and availability of environmental statements. The agency responsible for the environmental statement is also responsible for making the statement, the comments received, and any underlying documents available to the public pursuant to the provisions of the Freedom of Information Act (5 U.S.C., 552), without regard to the exclusion of intra- or interagency memoranda when such memoranda transmit comments of Federal agencies on the environmental impact of the proposed action pursuant to § 1500.9 of these guidelines. Agency procedures prepared

pursuant to § 1500.3(a) of these guidelines shall implement these public information requirements and shall include arrangements for availability of environmental statements and comments at the head and appropriate regional offices of the responsible agency and at appropriate State and areawide clearinghouses unless the Governor of the State involved designates to the Council some other point for receipt of this information. Notice of such designation of an alternate point for receipt of this information will be included in the Office of Management and Budget listing of clearinghouses referred to in § 1500.9(c).

(e) Where emergency circumstances make it necessary to take an action with significant environmental impact without observing the provisions of these guidelines concerning minimum periods for agency review and advance availability of environmental statements, the Federal agency proposing to take the action should consult with the Council about alternative arrangements. Similarly where there are overriding considerations of expense to the Government or impaired program effectiveness, the responsible agency should consult with the Council concerning appropriate modifications of the minimum periods.

(f) In order to assist the Council in fulfilling its responsibilities under the Act and under Executive Order 11514, all agencies shall (as required by section 102(2)(H) of the Act and section 3(i) of Executive Order 11514) be responsive to requests by the Council for reports and other information dealing with issues arising in connection with the implementation of the Act. In particular, agencies shall be responsive to a request by the Council for the preparation and circulation of an environmental statement, unless the agency determines that such a statement is not required, in which case the agency shall prepare an environmental assessment and a publicly available record briefly setting forth the reasons for its determination. In no case, however, shall the Council's silence or failure to comment or request preparation, modification, or recirculation of an environmental statement or to take other action with respect to an environmental statement be construed as bearing in any way on the question of the legal requirement for or the adequacy of such statement under the Act.

§ 1500.12 Legislative actions.

(a) The Council and the Office of Management and Budget will cooperate in giving guidance as needed to assist agencies in identifying legislative items believed to have environmental significance. Agencies should prepare impact statements prior to submission of their legislative proposals to the Office of Management and Budget. In this regard, agencies should identify types of repetitive legislation requiring environmental impact statements (such as certain types of bills affecting transportation policy or annual construction authorizations).

(b) With respect to recommendations or reports on proposals for legislation to which section 102(2)(C) applies, the final text of the environmental statement and comments thereon should be available to the Congress and to the public for consideration in connection with the proposed legislation or report. In cases where the scheduling of congressional hearings on recommendations or reports on proposals for legislation which the Federal agency has forwarded to the Congress does not allow adequate time for the completion of a final text of an environmental statement (together with comments), a draft environmental statement may be furnished to the Congress and made available to the public pending transmittal of the comments as received and the final text.

§ 1500.13 Application of section 102(2)(C) procedure to existing projects and programs.

Agencies have an obligation to reassess ongoing projects and programs in order to avoid or minimize adverse environmental effects. The section 102(2)(C) procedure shall be applied to further major Federal actions having a significant effect on the environment even though they arise from projects or programs initiated prior to enactment of the Act on January 1, 1970. While the status of the work and degree of completion may be considered in determining whether to proceed with the project, it is essential that the environmental impacts of proceeding are reassessed pursuant to the Act's policies and procedures and, if the project or program is continued, that further incremental major actions be shaped so as to enhance and restore environmental quality as well as to avoid or minimize adverse environmental consequences. It is also important in further action that account be taken of environmental consequences not fully evaluated at the outset of the project or program.

§ 1500.14 Supplementary guidelines; evaluation of procedures.

(a) The Council after examining environmental statements and agency procedures with respect to such statements will issue such supplements to these guidelines as are necessary.

(b) Agencies will continue to assess their experience in the implementation of the section 102(2)(C) provisions of the Act and in conforming with these guidelines and report thereon to the Council by June 30, 1974. Such reports should include an identification of the problem areas and suggestions for revision or clarification of these guidelines to achieve effective coordination of views on environmental aspects (and alternatives, where appropriate) of proposed actions without imposing unproductive administrative procedures. Such reports shall also indicate what progress the agency has made in developing substantive criteria and guidance for making environmental assessments as required by § 1500.6(c) of this directive and by section 102(2)(B) of the Act.

Effective date. The revisions of these guidelines shall apply to all draft and final impact statements filed with the Council after January 28, 1973.

RUSSELL E. TRAIN,
Chairman.

APPENDIX I—SUMMARY TO ACCOMPANY DRAFT AND FINAL STATEMENTS

(Check one) () Draft. () Final Environmental Statement.

Name of responsible Federal agency (with name of operating division where appropriate). Name, address, and telephone number of individual at the agency who can be contacted for additional information about the proposed action or the statement.

1. Name of action (Check one) () Administrative Action. () Legislative Action.

2. Brief description of action and its purpose. Indicate what States (and counties) particularly affected, and what other proposed Federal actions in the area, if any, are discussed in the statement.

3. Summary of environmental impacts and adverse environmental effects.

4. Summary of major alternatives considered.

5. (For draft statements) List all Federal, State, and local agencies and other parties from which comments have been requested. (For final statements) List all Federal, State, and local agencies and other parties from which written comments have been received.

6. Date draft statement (and final environmental statement, if one has been issued) made available to the Council and the public.

APPENDIX II—AREAS OF ENVIRONMENTAL IMPACT AND FEDERAL AGENCIES AND FEDERAL STATE AGENCIES¹ WITH JURISDICTION BY LAW OR SPECIAL EXPERTISE TO COMMENT THEREON²

AIR

Air Quality

Department of Agriculture—
Forest Service (effects on vegetation)
Atomic Energy Commission (radioactive substances)
Department of Health, Education, and Welfare
Environmental Protection Agency
Department of the Interior—
Bureau of Mines (fossil and gaseous fuel combustion)
Bureau of Sport Fisheries and Wildlife (effect on wildlife)
Bureau of Outdoor Recreation (effects on recreation)
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
National Aeronautics and Space Administration (remote sensing, aircraft emissions)
Department of Transportation—
Assistant Secretary for Systems Development and Technology (auto emissions)
Coast Guard (vessel emissions)
Federal Aviation Administration (aircraft emissions)

¹ River Basin Commissions (Delaware, Great Lakes, Missouri, New England, Ohio, Pacific Northwest, Souris-Red-Rainy, Susquehanna, Upper Mississippi) and similar Federal-State agencies should be consulted on actions affecting the environment of their specific geographic jurisdictions.

² In all cases where a proposed action will have significant international environmental effects, the Department of State should be consulted, and should be sent a copy of any draft and final impact statement which covers such action.

Weather Modification

Department of Agriculture—
Forest Service
Department of Commerce—
National Oceanic and Atmospheric Administration
Department of Defense—
Department of the Air Force
Department of the Interior
Bureau of Reclamation

WATER RESOURCES COUNCIL

WATER

Water Quality

Department of Agriculture—
Soil Conservation Service
Forest Service
Atomic Energy Commission (radioactive substances)
Department of the Interior—
Bureau of Reclamation
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
Geological Survey
Office of Saline Water
Environmental Protection Agency
Department of Health, Education, and Welfare
Department of Defense—
Army Corps of Engineers
Department of the Navy (ship pollution control)
National Aeronautics and Space Administration (remote sensing)
Department of Transportation—
Coast Guard (oil spills, ship sanitation)
Department of Commerce—
National Oceanic and Atmospheric Administration
Water Resources Council
River Basin Commissions (as geographically appropriate)

Marine Pollution, Commercial Fishery Conservation, and Shellfish Sanitation

Department of Commerce—
National Oceanic and Atmospheric Administration
Department of Defense—
Army Corps of Engineers
Office of the Oceanographer of the Navy
Department of Health, Education, and Welfare
Department of the Interior—
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
Bureau of Land Management (outer continental shelf)
Geological Survey (outer continental shelf)
Department of Transportation—
Coast Guard
Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
Water Resources Council
River Basin Commissions (as geographically appropriate)

Waterway Regulation and Stream Modification

Department of Agriculture—
Soil Conservation Service
Department of Defense—
Army Corps of Engineers
Department of the Interior—
Bureau of Reclamation
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
Geological Survey
Department of Transportation—
Coast Guard
Environmental Protection Agency

National Aeronautics and Space Administration (remote sensing)
Water Resources Council
River Basin Commissions (as geographically appropriate)

FISH AND WILDLIFE

Department of Agriculture—
Forest Service
Soil Conservation Service
Department of Commerce—
National Oceanic and Atmospheric Administration (marine species)
Department of the Interior—
Bureau of Sport Fisheries and Wildlife
Bureau of Land Management
Bureau of Outdoor Recreation
Environmental Protection Agency

SOLID WASTE

Atomic Energy Commission (radioactive waste)
Department of Defense—
Army Corps of Engineers
Department of Health, Education, and Welfare
Department of the Interior—
Bureau of Mines (mineral waste, mine acid waste, municipal solid waste, recycling)
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
Geological Survey (geologic and hydrologic effects)
Office of Saline Water (demineralization)
Department of Transportation—
Coast Guard (ship sanitation)
Environmental Protection Agency
River Basin Commissions (as geographically appropriate)
Water Resources Council

NOISE

Department of Commerce—
National Bureau of Standards
Department of Health, Education, and Welfare
Department of Housing and Urban Development (land use and building materials aspects)
Department of Labor—
Occupational Safety and Health Administration
Department of Transportation—
Assistant Secretary for Systems Development and Technology
Federal Aviation Administration, Office of Noise Abatement
Environmental Protection Agency
National Aeronautics and Space Administration

RADIATION

Atomic Energy Commission
Department of Commerce—
National Bureau of Standards
Department of Health, Education, and Welfare
Department of the Interior—
Bureau of Mines (uranium mines)
Mining Enforcement and Safety Administration (uranium mines)
Environmental Protection Agency

HAZARDOUS SUBSTANCES

Toxic Materials

Atomic Energy Commission (radioactive substances)
Department of Agriculture—
Agricultural Research Service
Consumer and Marketing Service
Department of Commerce—
National Oceanic and Atmospheric Administration
Department of Defense
Department of Health, Education, and Welfare
Environmental Protection Agency

RULES AND REGULATIONS

Food Additives and Contamination of Foodstuffs

Department of Agriculture—
Consumer and Marketing Service (meat and poultry products)
Department of Health, Education, and Welfare
Environmental Protection Agency

Pesticides

Department of Agriculture—
Agricultural Research Service (biological controls, food and fiber production)
Consumer and Marketing Service
Forest Service

Department of Commerce—
National Oceanic and Atmospheric Administration
Department of Health, Education, and Welfare

Department of the Interior—
Bureau of Sport Fisheries and Wildlife (fish and wildlife effects)
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Reclamation (irrigated lands)
Environmental Protection Agency

Transportation and Handling of Hazardous Materials

Atomic Energy Commission (radioactive substances)

Department of Commerce—
Maritime Administration
National Oceanic and Atmospheric Administration (effects on marine life and the coastal zone)

Department of Defense—
Armed Services Explosive Safety Board
Army Corps of Engineers (navigable waterways)

Department of Transportation—
Federal Highway Administration, Bureau of Motor Carrier Safety
Coast Guard
Federal Railroad Administration
Federal Aviation Administration
Assistant Secretary for Systems Development and Technology
Office of Hazardous Materials
Office of Pipeline Safety
Environmental Protection Agency

*ENERGY SUPPLY AND NATURAL RESOURCES DEVELOPMENT**Electric Energy Development, Generation, and Transmission, and Use*

Atomic Energy Commission (nuclear)
Department of Agriculture—
Rural Electrification Administration (rural areas)

Department of Defense—
Army Corps of Engineers (hydro)
Department of Health, Education, and Welfare (radiation effects)

Department of Housing and Urban Development (urban areas)

Department of the Interior—
Bureau of Indian Affairs (Indian lands)
Bureau of Land Management (public lands)
Bureau of Reclamation
Power Marketing Administrations
Geological Survey
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
National Park Service

Environmental Protection Agency
Federal Power Commission (hydro, transmission, and supply)

River Basin Commissions (as geographically appropriate)

Tennessee Valley Authority
Water Resources Council

Petroleum Development, Extraction, Refining, Transport, and Use

Department of the Interior—
Office of Oil and Gas
Bureau of Mines
Geological Survey
Bureau of Land Management (public lands and outer continental shelf)
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife (effects on fish and wildlife)
Bureau of Outdoor Recreation
National Park Service
Department of Transportation (Transport and Pipeline Safety)
Environmental Protection Agency
Interstate Commerce Commission

Natural Gas Development, Production, Transmission, and Use

Department of Housing and Urban Development (urban areas)

Department of the Interior—
Office of Oil and Gas
Geological Survey
Bureau of Mines
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
National Park Service

Department of Transportation (transport and safety)

Environmental Protection Agency
Federal Power Commission (production, transmission, and supply)
Interstate Commerce Commission

Coal and Minerals Development, Mining, Conversion, Processing, Transport, and Use

Appalachian Regional Commission
Department of Agriculture—
Forest Service
Department of Commerce
Department of the Interior—
Office of Coal Research
Mining Enforcement and Safety Administration
Bureau of Mines
Geological Survey
Bureau of Indian Affairs (Indian lands)
Bureau of Land Management (public lands)
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
National Park Service

Department of Labor—
Occupational Safety and Health Administration

Department of Transportation
Environmental Protection Agency
Interstate Commerce Commission
Tennessee Valley Authority

Renewable Resource Development, Production, Management, Harvest, Transport, and Use

Department of Agriculture—
Forest Service
Soil Conservation Service
Department of Commerce
Department of Housing and Urban Development (building materials)

Department of the Interior—
Geological Survey
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife
Bureau of Outdoor Recreation
National Park Service

Department of Transportation
Environmental Protection Agency
Interstate Commerce Commission (freight rates)

Energy and Natural Resources Conservation

Department of Agriculture—
Forest Service
Soil Conservation Service
Department of Commerce—
National Bureau of Standards (energy efficiency)
Department of Housing and Urban Development—
Federal Housing Administration (housing standards)
Department of the Interior—
Office of Energy Conservation
Bureau of Mines
Bureau of Reclamation
Geological Survey
Power Marketing Administration
Department of Transportation
Environmental Protection Agency
Federal Power Commission
General Services Administration (design and operation of buildings)
Tennessee Valley Authority

*LAND USE AND MANAGEMENT**Land Use Changes, Planning and Regulation of Land Development*

Department of Agriculture—
Forest Service (forest lands)
Agricultural Research Service (agricultural lands)
Department of Housing and Urban Development
Department of the Interior—
Office of Land Use and Water Planning
Bureau of Land Management (public lands)
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife (wildlife refuges)
Bureau of Outdoor Recreation (recreation lands)
National Park Service (NPS units)
Department of Transportation
Environmental Protection Agency (pollution effects)
National Aeronautics and Space Administration (remote sensing)
River Basins Commissions (as geographically appropriate)

Public Land Management

Department of Agriculture—
Forest Service (forests)
Department of Defense
Department of the Interior—
Bureau of Land Management
Bureau of Indian Affairs (Indian lands)
Bureau of Sport Fisheries and Wildlife (wildlife refuges)
Bureau of Outdoor Recreation (recreation lands)
National Park Service (NPS units)
Federal Power Commission (project lands)
General Services Administration
National Aeronautics and Space Administration (remote sensing)
Tennessee Valley Authority (project lands)

PROTECTION OF ENVIRONMENTALLY CRITICAL AREAS—FLOODPLAINS, WETLANDS, BEACHES AND DUNES, UNSTABLE SOILS, STEEP SLOPES, AQUIFER RECHARGE AREAS, ETC.

Department of Agriculture—
Agricultural Stabilization and Conservation Service
Soil Conservation Service
Forest Service
Department of Commerce—
National Oceanic and Atmospheric Administration (coastal areas)
Department of Defense—
Army Corps of Engineers
Department of Housing and Urban Development (urban and floodplain areas)

Department of the Interior—
Office of Land Use and Water Planning
Bureau of Outdoor Recreation
Bureau of Reclamation
Bureau of Sport Fisheries and Wildlife
Bureau of Land Management
Geological Survey
Environmental Protection Agency (pollution effects)
National Aeronautics and Space Administration (remote sensing)
River Basins Commissions (as geographically appropriate)
Water Resources Council

LAND USE IN COASTAL AREAS

Department of Agriculture—
Forest Service
Soil Conservation Service (soil stability, hydrology)
Department of Commerce—
National Oceanic and Atmospheric Administration (impact on marine life and coastal zone management)
Department of Defense—
Army Corps of Engineers (beaches, dredge and fill permits, Refuse Act permits)
Department of Housing and Urban Development (urban areas)
Department of the Interior—
Office of Land Use and Water Planning
Bureau of Sport Fisheries and Wildlife
National Park Service
Geological Survey
Bureau of Outdoor Recreation
Bureau of Land Management (public lands)
Department of Transportation—
Coast Guard (bridges, navigation)
Environmental Protection Agency (pollution effects)
National Aeronautics and Space Administration (remote sensing)

REDEVELOPMENT AND CONSTRUCTION IN BUILT-UP AREAS

Department of Commerce—
Economic Development Administration (designated areas)
Department of Housing and Urban Development
Department of the Interior—
Office of Land Use and Water Planning
Bureau of Outdoor Recreation
Environmental Protection Agency
General Services Administration
Office of Economic Opportunity

DENSITY AND CONGESTION MITIGATION

Department of Health, Education, and Welfare
Department of Housing and Urban Development
Department of the Interior—
Office of Land Use and Water Planning
Bureau of Outdoor Recreation
Department of Transportation
Environmental Protection Agency

NEIGHBORHOOD CHARACTER AND CONTINUITY

Department of Health, Education, and Welfare
Department of Housing and Urban Development
National Endowment for the Arts
Office of Economic Opportunity

IMPACTS ON LOW-INCOME POPULATIONS

Department of Commerce—
Economic Development Administration (designated areas)
Department of Health, Education, and Welfare
Department of Housing and Urban Development
Office of Economic Opportunity

HISTORIC, ARCHITECTURAL, AND ARCHEOLOGICAL PRESERVATION

Advisory Council on Historic Preservation
Department of Housing and Urban Development
Department of the Interior—
National Park Service
Bureau of Land Management (public lands)
Bureau of Indian Affairs (Indian lands)
General Services Administration
National Endowment for the Arts

SOIL AND PLANT CONSERVATION AND HYDROLOGY

Department of Agriculture—
Soil Conservation Service
Agricultural Service
Forest Service
Department of Commerce—
National Oceanic and Atmospheric Administration
Department of Defense—
Army Corps of Engineers (dredging, aquatic plants)
Department of Health, Education, and Welfare
Department of the Interior—
Bureau of Land Management
Bureau of Sport Fisheries and Wildlife
Geological Survey
Bureau of Reclamation
Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
River Basin Commissions (as geographically appropriate)
Water Resources Council

OUTDOOR RECREATION

Department of Agriculture—
Forest Service
Soil Conservation Service
Department of Defense—
Army Corps of Engineers
Department of Housing and Urban Development (urban areas)
Department of the Interior—
Bureau of Land Management
National Park Service
Bureau of Outdoor Recreation
Bureau of Sport Fisheries and Wildlife
Bureau of Indian Affairs
Environmental Protection Agency
National Aeronautics and Space Administration (remote sensing)
River Basin Commissions (as geographically appropriate)
Water Resources Council

APPENDIX III—OFFICES WITHIN FEDERAL AGENCIES AND FEDERAL-STATE AGENCIES FOR INFORMATION REGARDING THE AGENCIES' NEPA ACTIVITIES AND FOR RECEIVING OTHER AGENCIES' IMPACT STATEMENTS FOR WHICH COMMENTS ARE REQUESTED

ADVISORY COUNCIL ON HISTORIC PRESERVATION
Office of Architectural and Environmental Preservation, Advisory Council on Historic Preservation, Suite 430, 1522 K Street, N.W., Washington, D.C. 20005 254-3974

Regional Administrator, I,
U.S. Environmental Protection Agency
Room 2303, John F. Kennedy
Federal Bldg., Boston, Mass. 02203,
(617) 223-7210

Regional Administrator, II,
U.S. Environmental Protection Agency
Room 908, 26 Federal Plaza
New York, New York 10007
(212) 264-2525

DEPARTMENT OF AGRICULTURE¹

Office of the Secretary, Attn: Coordinator
Environmental Quality Activities, U.S. Department of Agriculture, Washington, D.C. 20250 447-3965

APPALACHIAN REGIONAL COMMISSION

Office of the Alternate Federal Co-Chairman,
Appalachian Regional Commission, 1666
Connecticut Avenue, N.W., Washington,
D.C. 20235 967-4103

DEPARTMENT OF THE ARMY (CORPS OF ENGINEERS)

Executive Director of Civil Works, Office of
the Chief of Engineers, U.S. Army Corps of
Engineers, Washington, D.C. 20314 693-
7168

ATOMIC ENERGY COMMISSION

For nonregulatory matters: Office of Assistant
General Manager for Biomedical and Environmental
Research and Safety Programs, Atomic Energy Commission, Washington,
D.C. 20545 973-3208

For regulatory matters: Office of the Assistant
Director for Environmental Projects,
Atomic Energy Commission, Washington,
D.C. 20545 973-7531

DEPARTMENT OF COMMERCE

Office of the Deputy Assistant Secretary for
Environmental Affairs, U.S. Department of
Commerce, Washington, D.C. 20230 967-
4335

DEPARTMENT OF DEFENSE

Office of the Assistant Secretary for Defense
(Health and Environment), U.S. Department
of Defense, Room 3E172, The Pentagon,
Washington, D.C. 20301 697-2111

DELAWARE RIVER BASIN COMMISSION

Office of the Secretary, Delaware River
Basin Commission, Post Office Box 360,
Trenton, N.J. 08603 (609) 883-9500

ENVIRONMENTAL PROTECTION AGENCY²

Director, Office of Federal Activities, Environmental
Protection Agency, 401 M Street,
S.W., Washington, D.C. 20460 755-0777

¹Requests for comments or information from individual units of the Department of Agriculture, e.g., Soil Conservation Service, Forest Service, etc. should be sent to the Office of the Secretary, Department of Agriculture, at the address given above.

²Contact the Office of Federal Activities for environmental statements concerning legislation, regulations, national program proposals or other major policy issues.

For all other EPA consultation, contact the Regional Administrator in whose area the proposed action (e.g., highway or water resource construction projects) will take place. The Regional Administrators will coordinate the EPA review. Addresses of the Regional Administrators, and the areas covered by their regions are as follows:

Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont

New Jersey, New York, Puerto Rico, Virgin Islands

RULES AND REGULATIONS

Regional Administrator, III,
U.S. Environmental Protection Agency
Curtis Bldg., 6th & Walnut Sts.
Philadelphia, Pa. 19106
(215) 597-9801

Regional Administrator, IV,
U.S. Environmental Protection Agency
1421 Peachtree Street
N.E., Atlanta, Ga. 30309
(404) 526-5727

Regional Administrator V,
U.S. Environmental Protection Agency
1 N. Wacker Drive
Chicago, Illinois 60606
(312) 353-5250

Regional Administrator VI,
U.S. Environmental Protection Agency
1600 Patterson Street
Suite 1100
Dallas, Texas 75201
(214) 749-1962

Regional Administrator VII,
U.S. Environmental Protection Agency
1735 Baltimore Avenue
Kansas City, Missouri 64108
(816) 374-5493

Regional Administrator VIII,
U.S. Environmental Protection Agency
Suite 900, Lincoln Tower
1860 Lincoln Street
Denver, Colorado 80203
(303) 837-3895

Regional Administrator IX,
U.S. Environmental Protection Agency
100 California Street
San Francisco, California 94111
(415) 556-2320

Regional Administrator X,
U.S. Environmental Protection Agency
1200 Sixth Avenue
Seattle, Washington 98101
(206) 442-1220

Delaware, Maryland, Pennsylvania, Virginia,
West Virginia, District of Columbia

Alabama, Florida, Georgia, Kentucky, Missis-
sippi, North Carolina, South Carolina, Ten-
nessee

Illinois, Indiana, Michigan, Minnesota, Ohio,
Wisconsin

Arkansas, Louisiana, New Mexico, Texas,
Oklahoma

Iowa, Kansas, Missouri, Nebraska

Colorado, Montana, North Dakota, South
Dakota, Utah, Wyoming

Arizona, California, Hawaii, Nevada, Ameri-
can Samoa, Guam, Trust Territories of
Pacific Islands, Wake Island

Alaska, Idaho, Oregon, Washington

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT*

Director, Office of Community and Environ-
mental Standards, Department of Hous-
ing and Urban Development, Room 7206,
Washington, D.C. 20410
755-5980

Region VI:
Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
1114 Commerce Street
Dallas, Texas 75202 (214) 749-2236

Region VII:
Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
601 East 12th Street
Kansas City, Missouri 64106 (816) 374-
3584

Region VIII:
Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
9017 Federal Building
19th and Stout Streets
Denver, Colorado 80202 (303) 837-4178

Region IX:
Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
50 Fulton Street
San Francisco, California 94102 (415)
556-1970

Region X:
Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
Arcade Plaza Building
1321 Second Street
Seattle, Washington 98101 (206) 442-
0490

*Contact the Director with regard to en-
vironmental impacts of legislation, policy
statements, program regulations and pro-
cedures, and precedent-making project de-
cisions. For all other HUD consultation, con-
tact the HUD Regional Administrator in
whose jurisdiction the project lies, as fol-
lows:

Regional Administrator I,
Environmental Clearance Officer
U.S. Department of Housing and Urban
Development
Room 405, John F. Kennedy Federal
Building
Boston, Mass. 02203 (617) 223-4066

Regional Administrator II,
Environmental Clearance Officer
U.S. Department of Housing and Urban
Development
26 Federal Plaza
New York, New York 10007 (212) 264-
8068

Regional Administrator III,
Environmental Clearance Officer
U.S. Department of Housing and Urban
Development
Curtis Building, Sixth and Walnut
Streets
Philadelphia, Pennsylvania 19106 (215)
597-2560

Regional Administrator IV,
Environmental Clearance Officer
U.S. Department of Housing and Urban
Development
Peachtree-Seventh Building
Atlanta, Georgia 30323 (404) 526-5585

Regional Administrator V,
Environmental Clearance Officer
U.S. Department of Housing and Urban
Development
360 North Michigan Avenue
Chicago, Illinois 60601 (312) 353-5680

FEDERAL POWER COMMISSION

Commission's Advisor on Environmental
Quality, Federal Power Commission, 825 N.
Capitol Street, N.E., Washington, D.C. 20426
386-6084

GENERAL SERVICES ADMINISTRATION

Office of Environmental Affairs, Office of the
Deputy Administrator for Special Projects,
General Services Administration, Washing-
ton, D.C. 20405 343-4161

GREAT LAKES BASIN COMMISSION

Office of the Chairman, Great Lakes Basin
Commission, 3475 Plymouth Road, P.O. Box
999, Ann Arbor, Michigan 48105 (313) 769-
7431

DEPARTMENT OF HEALTH, EDUCATION AND WELFARE*

Office of Environmental Affairs, Office of the
Assistant Secretary for Administration and
Management, Department of Health, Edu-
cation and Welfare, Washington, D.C. 20202
963-4456

*Contact the Office of Environmental Af-
fairs for information on HEW's environmen-
tal statements concerning legislation, regu-
lations, national program proposals or other
major policy issues, and for all requests for
HEW comment on impact statements of
other agencies.

For information with respect to HEW ac-
tions occurring within the jurisdiction of the
Departments' Regional Directors, contact the
appropriate Regional Environmental Officer:

Region I:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
Room 2007B
John F. Kennedy Center
Boston, Massachusetts 02203 (617) 223-
6837

Region II:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
Federal Building
26 Federal Plaza
New York, New York 10007 (212) 264-
1308

Region III:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
P.O. Box 13716
Philadelphia, Pennsylvania 19101 (215)
597-6498

Region IV:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
Room 404
50 Seventh Street, N.E.
Atlanta, Georgia 30323 (404) 526-5817

Region V:

Regional Environmental Officer
U.S. Department of Health, Education
and Welfare
Room 712, New Post Office Building
433 West Van Buren Street
Chicago, Illinois 60607 (312) 353-1644

DEPARTMENT OF THE INTERIOR *

Director, Office of Environmental Project Review, Department of the Interior, Interior Building, Washington, D.C. 20240 343-3891

INTERSTATE COMMERCE COMMISSION

Office of Proceedings, Interstate Commerce Commission, Washington, D.C. 20423 343-6167

DEPARTMENT OF LABOR

Assistant Secretary for Occupational Safety and Health, Department of Labor, Washington, D.C. 20210 961-3405

MISSOURI RIVER BASINS COMMISSION

Office of the Chairman, Missouri River Basins Commission, 10050 Regency Circle, Omaha, Nebraska 68114 (402) 397-5714

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Office of the Comptroller, National Aeronautics and Space Administration, Washington, D.C. 20546 755-8440

NATIONAL CAPITAL PLANNING COMMISSION

Office of Environmental Affairs, Office of the Executive Director, National Capital Planning Commission, Washington, D.C. 20576 382-7200

NATIONAL ENDOWMENT FOR THE ARTS

Office of Architecture and Environmental Arts Program, National Endowment for the Arts, Washington, D.C. 20506 382-5765

NEW ENGLAND RIVER BASINS COMMISSION

Office of the Chairman, New England River Basins Commission, 55 Court Street, Boston, Mass. 02108 (617) 223-6244

Regional Administrator VI,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
Federal Office Building, 819 Taylor Street
Fort Worth, Texas 76102 (817) 334-2867

Regional Administrator VII,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
911 Walnut Street
Kansas City, Missouri 64106 (816) 374-2661

Regional Administrator VIII,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
Samsonite Building, 1051 South Broadway
Denver, Colorado 80209 (303) 837-4061
Regional Administrator IX,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
450 Golden Gate Avenue, Post Office Box 36003
San Francisco, California 94102 (415) 556-4752

Regional Administrator X,
Environmental Clearance Officer
U.S. Department of Housing and Urban Development
Room 226, Arcade Plaza Building
Seattle, Washington 98101 (206) 583-5415

*Requests for comments or information from individual units of the Department of the Interior should be sent to the Office of Environmental Project Review at the address given above.

OFFICE OF ECONOMIC OPPORTUNITY

Office of the Director, Office of Economic Opportunity, 1200 19th Street, N.W., Washington, D.C. 20506 254-6000

OHIO RIVER BASIN COMMISSION

Office of the Chairman, Ohio River Basin Commission, 36 East 4th Street, Suite 208-20, Cincinnati, Ohio 45202 (513) 684-3831

PACIFIC NORTHWEST RIVER BASINS COMMISSION

Office of the Chairman, Pacific Northwest River Basins Commission, 1 Columbia River, Vancouver, Washington 98660 (206) 695-3606

SOURIS-RED-RAINY RIVER BASINS COMMISSION

Office of the Chairman, Souris-Red-Rainy River Basins Commission, Suite 6, Professional Building, Holiday Mall, Moorhead, Minnesota 56560 (701) 237-5227

DEPARTMENT OF STATE

Office of the Special Assistant to the Secretary for Environmental Affairs, Department of State, Washington, D.C. 20520 632-7964

SUSQUEHANNA RIVER BASIN COMMISSION

Office of the Executive Director, Susquehanna River Basin Commission, 5012 Lenker Street, Mechanicsburg, Pa. 17055 (717) 737-0501

TENNESSEE VALLEY AUTHORITY

Office of the Director of Environmental Research and Development, Tennessee Valley Authority, 720 Edney Building, Chattanooga, Tennessee 37401 (615) 755-2002

DEPARTMENT OF TRANSPORTATION *

Director, Office of Environmental Quality, Office of the Assistant Secretary for Environment, Safety, and Consumer Affairs, Department of Transportation, Washington, D.C. 20590 426-4357

*Contact the Office of Environmental Quality, Department of Transportation, for information on DOT's environmental statements concerning legislation, regulations, national program proposals, or other major policy issues.

For information regarding the Department of Transportation's other environmental statements, contact the national office for the appropriate administration:

U.S. Coast Guard

Office of Marine Environment and Systems, U.S. Coast Guard, 400 7th Street, S.W., Washington, D.C. 20590, 426-2007

Federal Aviation Administration

Office of Environmental Quality, Federal Aviation Administration, 800 Independence Avenue, S.W., Washington, D.C. 20591, 426-8406

Federal Highway Administration

Office of Environmental Policy, Federal Highway Administration, 400 7th Street, S.W., Washington, D.C. 20590, 426-0351

Federal Railroad Administration

Office of Policy and Plans, Federal Railroad Administration, 400 7th Street, S.W., Washington, D.C. 20590, 423-1567

Urban Mass Transportation Administration

Office of Program Operations, Urban Mass Transportation Administration, 400 7th Street, S.W., Washington, D.C. 20590, 426-4020

For other administration's not listed above, contact the Office of Environmental Quality, Department of Transportation, at the address given above.

For comments on other agencies' environmental statements, contact the appropriate administration's regional office. If more than one administration within the Department of Transportation is to be requested to comment, contact the Secretarial Representative in the appropriate Regional Office for coordination of the Department's comments:

SECRETARIAL REPRESENTATIVE

Region I Secretarial Representative, U.S. Department of Transportation, Transportation Systems Center, 55 Broadway, Cambridge, Massachusetts 02142 (617) 494-2709

Region II Secretarial Representative, U.S. Department of Transportation, 26 Federal Plaza, Room 1811, New York, New York 10007 (212) 264-2672

Region III Secretarial Representative, U.S. Department of Transportation, Mall Building, Suite 1214, 325 Chestnut Street, Philadelphia, Pennsylvania 19106 (215) 597-0407

Region IV Secretarial Representative, U.S. Department of Transportation, Suite 515, 1720 Peachtree Rd., N.W. Atlanta, Georgia 30309 (404) 526-3738

Region V Secretarial Representative, U.S. Department of Transportation, 17th Floor, 300 S. Wacker Drive, Chicago, Illinois 60606 (312) 353-4000

Region V Secretarial Representative, U.S. Department of Transportation, 9-C-18 Federal Center, 1100 Commerce Street, Dallas, Texas 75202 (214) 749-1851

Region VII Secretarial Representative, U.S. Department of Transportation, 601 E. 12th Street, Room 634, Kansas City, Missouri 64106 (816) 374-2761

Region VIII Secretarial Representative, U.S. Department of Transportation, Prudential Plaza, Suite 1822, 1050 17th Street, Denver, Colorado 80225 (303) 837-3242

Region IX Secretarial Representative, U.S. Department of Transportation, 450 Golden Gate Avenue, Box 36133, San Francisco, California 94102 (415) 556-5961

Region X Secretarial Representative, U.S. Department of Transportation, 1321 Second Avenue, Room 507, Seattle, Washington 98101 (206) 442-0590

FEDERAL AVIATION ADMINISTRATION

New England Region, Office of the Regional Director, Federal Aviation Administration, 154 Middlesex Street, Burlington, Massachusetts 01803 (617) 272-2350

Eastern Region, Office of the Regional Director, Federal Aviation Administration, Federal Building, JFK International Airport, Jamaica, New York 11430 (212) 995-3333

Southern Region, Office of the Regional Director, Federal Aviation Administration, P.O. Box 20636, Atlanta, Georgia 30320 (404) 526-7222

Great Lakes Region, Office of the Regional Director, Federal Aviation Administration, 2300 East Devon, Des Plaines, Illinois 60018 (312) 694-4500

Southwest Region, Office of the Regional Director, Federal Aviation Administration, P.O. Box 1689, Fort Worth, Texas 76101 (817) 624-4911

Central Region, Office of the Regional Director, Federal Aviation Administration, 601 E. 12th Street, Kansas City, Missouri 64106 (816) 374-5626

Rocky Mountain Region, Office of the Regional Director, Federal Aviation Administration, Park Hill Station, P.O. Box 7213, Denver, Colorado 80207 (303) 837-3646

Western Region, Office of the Regional Director, Federal Aviation Administration, P.O. Box 92007, WorldWay Postal Center, Los Angeles, California 90009 (213) 536-6427

Northwest Region, Office of the Regional Director, Federal Aviation Administration, FAA Building, Boeing Field, Seattle, Washington 98108 (206) 767-2780

FEDERAL HIGHWAY ADMINISTRATION

Region 1, Regional Administrator, Federal Highway Administration, 4 Normanskill Boulevard, Delmar, New York 12054 (518) 472-6476

Region 3, Regional Administrator, Federal Highway Administration, Room 1621, George H. Fallon Federal Office Building, 31 Hopkins Plaza, Baltimore, Maryland 21201 (301) 962-2361

Region 4, Regional Administrator, Federal Highway Administration, Suite 200, 1720 Peachtree Road, N.W., Atlanta, Georgia 30309 (404) 526-5078

Region 5, Regional Administrator, Federal Highway Administration, Dixie Highway, Homewood, Illinois 60430 (312) 799-6300

Region 6, Regional Administrator, Federal Highway Administration, 819 Taylor Street, Fort Worth, Texas 76102 (817) 334-3232

Region 7, Regional Administrator, Federal Highway Administration, P.O. Box 7186, Country Club Station, Kansas City, Missouri 64113 (816) 361-7563

Region 8, Regional Administrator, Federal Highway Administration, Room 242, Building 40, Denver Federal Center, Denver, Colorado 80225

Region 9, Regional Administrator, Federal Highway Administration, 450 Golden Gate Avenue, Box 36096, San Francisco, California 94102 (415) 556-3895

Region 10, Regional Administrator, Federal Highway Administration, Room 412, Mohawk Building, 222 S.W. Morrison Street, Portland, Oregon 97204 (503) 221-2065

URBAN MASS TRANSPORTATION ADMINISTRATION

Region I, Office of the UMTA Representative, Urban Mass Transportation Administration, Transportation Systems Center, Technology Building, Room 277, 55 Broadway, Boston, Massachusetts 02142 (617) 494-2055

Region II, Office of the UMTA Representative, Urban Mass Transportation Administration, 26 Federal Plaza, Suite 1809, New York, New York 10007 (212) 264-8162

Region III, Office of the UMTA Representative, Urban Mass Transportation Administration, Mail Building, Suite 1214, 325 Chestnut Street, Philadelphia, Pennsylvania 19106 (215) 597-0407

Region IV, Office of the UMTA Representative, Urban Mass Transportation Administration, 1720 Peachtree Road, Northwest, Suite 501, Atlanta, Georgia 30309 (404) 526-3948

Region V, Office of the UMTA Representative, Urban Mass Transportation Administration, 300 South Wacker Drive, Suite 700, Chicago, Illinois 60606 (312) 353-6005

Region VI, Office of the UMTA Representative, Urban Mass Transportation Administration, Federal Center, Suite 9E24, 1100 Commerce Street, Dallas, Texas 75202 (214) 749-7322

Region VII, Office of the UMTA Representative, Urban Mass Transportation Administration, c/o FAA Management Systems Division, Room 1564D, 601 East 12th Street, Kansas City, Missouri 64106 (816) 374-5567

Region VIII, Office of the UMTA Representative, Urban Mass Transportation Administration, Prudential Plaza, Suite 1822, 1050 17th Street, Denver, Colorado 80202 (303) 837-3242

Region IX, Office of the UMTA Representative, Urban Mass Transportation Administration, 450 Golden Gate Avenue, Box 36125, San Francisco, California 94102 (415) 556-2884

Region X, Office of the UMTA Representative, Urban Mass Transportation Administration, 1321 Second Avenue, Suite 5079, Seattle, Washington (206) 442-0590

DEPARTMENT OF THE TREASURY

Office of Assistant Secretary for Administration, Department of the Treasury, Washington, D.C. 20220 964-5391

UPPER MISSISSIPPI RIVER BASIN COMMISSION

Office of the Chairman, Upper Mississippi River Basin Commission, Federal Office Building, Fort Snelling, Twin Cities, Minnesota 55111 (612) 725-4690

WATER RESOURCES COUNCIL

Office of the Associate Director, Water Resources Council, 2120 L Street, N.W., Suite 800, Washington, D.C. 20037 254-6442

APPENDIX IV—STATE AND LOCAL AGENCY REVIEW OF IMPACT STATEMENTS

1. OMB Circular No. A-95 through its system of clearinghouses provides a means for securing the views of State and local environmental agencies, which can assist in the preparation of impact statements. Under A-95,

review of the proposed project in the case of federally assisted projects (Part I of A-95) generally takes place prior to the preparation of the impact statement. Therefore, comments on the environmental effects of the proposed project that are secured during this stage of the A-95 process represent inputs to the environmental impact statement.

2. In the case of direct Federal development (Part II of A-95), Federal agencies are required to consult with clearinghouses at the earliest practicable time in the planning of the project or activity. Where such consultation occurs prior to completion of the draft impact statement, comments relating to the environmental effects of the proposed action would also represent inputs to the environmental impact statement.

3. In either case, whatever comments are made on environmental effects of proposed Federal or federally assisted projects by clearinghouses, or by State and local environmental agencies through clearinghouses, in the course of the A-95 review should be attached to the draft impact statement when it is circulated for review. Copies of the statement should be sent to the agencies making such comments. Whether those agencies then elect to comment again on the basis of the draft impact statement is a matter to be left to the discretion of the commenting agency depending on its resources, the significance of the project, and the extent to which its earlier comments were considered in preparing the draft statement.

4. The clearinghouses may also be used, by mutual agreement, for securing reviews of the draft environmental impact statement. However, the Federal agency may wish to deal directly with appropriate State or local agencies in the review of impact statements because the clearinghouses may be unwilling or unable to handle this phase of the process. In some cases, the Governor may have designated a specific agency, other than the clearinghouse, for securing reviews of impact statements. In any case, the clearinghouses should be sent copies of the impact statement.

5. To aid clearinghouses in coordinating State and local comments, draft statements should include copies of State and local agency comments made earlier under the A-95 process and should indicate on the summary sheet those other agencies from which comments have been requested, as specified in Appendix I of the CEQ Guidelines.

[FR Doc.73-15783 Filed 7-31-73; 8:45 am]

ORDER

5050.2B

INSTRUCTIONS FOR PROCESSING AIRPORT DEVELOPMENT ACTIONS AFFECTING THE ENVIRONMENT



OCTOBER 21, 1976

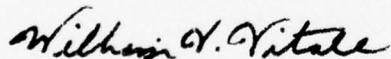
DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

Distribution: WAP/GC/EQ/SP-3, RAS /GC/PL-3,
FAS-1 (all employees)

Initiated By: AAP-410

FOREWORD

1. PURPOSE. This order provides instructions and guidance for preparing and processing the environmental assessments of airport development proposals as required by various laws and regulations.
2. DISTRIBUTION. This order is distributed to Washington Office of Airports Programs, Office of the Chief Counsel, Office of Environmental Quality, and the Office of Aviation System Plans to branch level; to Regional Airports Divisions, Regional Counsel, and Regional Planning Staffs to the branch level; and to all Airports District Offices.
3. CANCELLATION. Order 5050.2A, Instructions for Processing Airport Development Actions Affecting the Environment, dated February 24, 1975, is cancelled.
4. AUTHORITY. Section 102 of the National Environmental Policy Act of 1969 (P.L. 91-190) (hereinafter "NEPA"); Section 16 of the Airport and Airway Development Act of 1970 (P.L. 91-258), as amended (P.L. 94-353) (hereinafter "the Airport Act"); Section 4(f) of the Department of Transportation Act (P.L. 90-495); DOT Order 5610.1B (39 F.R. 35231); CEQ Guidelines (40 C.F.R. Part 1500).
5. APPLICABILITY. This order applies to any Federal decision relating to airport development. Included are actions involving the Planning Grant Program (PGP), the Airport Development Aid Program (ADAP), airport site selection pursuant to Sections 308 and 309 of the Federal Aviation Act of 1958, and requests by sponsors for the release of obligations to permit sale of airport property.



WILLIAM V. VITALE
Deputy Assistant Administrator
Office of Airports Programs

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CHAPTER 1. DEFINITIONS

1. DEFINITIONS APPLICABLE TO THIS ORDER.

- a. Major Federal Action Significantly Affecting the Quality of the Human Environment. This is any Federal action falling within the scope of paragraph 20 of this order. These actions require the preparation of an environmental impact statement.
- b. Environmental Impact Assessment Report. This is the report, prepared by the sponsor of an action, analyzing the environmental impact of a proposed action for which Federal financial assistance is being requested or for which a Federal authorization is required. This report may serve as the basis, in whole or in part, for the FAA's draft environmental impact statement or negative declaration.
- c. Draft Environmental Impact Statement. This is the document that represents FAA's evaluation of the environmental impact of a proposed action when coordination pursuant to Section 102(2)(C) of NEPA is initiated. The agency makes its own evaluation and assumes responsibility for the draft environmental impact statement. It is simultaneously distributed by FAA to the Council on Environmental Quality (CEQ), other appropriate Federal agencies, state and local agencies, and to the public.
- d. Environmental Decision Memorandum. This is an FAA staff memorandum transmitting the negative declaration or environmental impact statement and the proposed Federal Finding to the responsible official. The memorandum sets forth the action to be taken, discusses the key issues, and indicates any factors requiring special consideration.
- e. Final Environmental Impact Statement. This is the document that represents FAA's final evaluation of the environmental impact of a proposed major Federal action. The final environmental impact statement will usually consist of the draft environmental impact statement, as amended if necessary, comments thereon, responses thereto, the decision memorandum, and a Federal Finding. Reports cited as a reference in the statement need not be included in the documentation. The environmental impact statement is the vehicle for considering the environmental impacts of a proposed Federal action. This document must accompany each proposed action through the Federal decision-making process.
- f. Federal Finding. This is a determination by the responsible official signifying approval or disapproval of a negative declaration or a final environmental impact statement.

- g. Negative Declaration. This is the document that constitutes FAA's evaluation that a particular action will not significantly alter the airport's impact on its surrounding environment and the action is not highly controversial on environmental grounds. Coordination and review pursuant to Section 102(2)(C) of NEPA are not required.
 - h. Negative Declaration with Section 16(c)(4) Coordination. This is a negative declaration as defined above which, because the project involves airport location, a major runway extension, or runway location, must be coordinated with the Department of the Interior and the Environmental Protection Agency.
 - i. Prior Finding Affirmation. This is a finding by the responsible official that a proposed action is within the scope of a previously approved environmental impact statement or negative declaration. Affirmation of a prior finding establishes the continued validity of a previous environmental determination with respect to a currently proposed Federal action.
 - j. Human Environment. This is the aggregate of all external conditions and influences (ecological, biological, economic, social, cultural, historical, aesthetic, etc.) that affects the life of a human.
 - k. Responsible Official. This is the official responsible for making the final determination as to whether the environmental requirements for a proposed Federal action have been satisfied.
 - l. Sponsor. This is any public agency eligible to receive Federal financial assistance under the Airport Act or anyone proposing an airport development project for which a Federal authorization is required.
 - m. Major Runway Extension. This is a runway extension which either expands the airport's existing boundary or a clear zone into surrounding land areas, or upgrades an existing runway to permit first-time jet aircraft usage, to permit usage by a larger or noisier type of jet aircraft, or to permit a significant increase in the level of jet aircraft operations.
 - n. Major New Construction or Expansion of Passenger Handling and Parking Facilities. This is such development on a hub airport that would provide for accommodation of part or whole of an aggregate increase of 25 percent (but not less than 100,000) in enplanements for the forecast period.
2. - 9. RESERVED.

CHAPTER 2. REQUIREMENT FOR ENVIRONMENTAL CONSIDERATION

10. GENERAL. Environmental amenities and values shall be carefully considered and weighed in a timely manner in evaluating all proposed Federal actions relating to airport planning and development, utilizing a systematic interdisciplinary approach. The environmental assessment and consultation process is to provide officials and decision makers, as well as members of the public, with an understanding of the potential environmental impacts of the proposed action. While environmental considerations are obviously not the only ones to be weighed, they are to be evaluated as fully and as fairly as nonenvironmental considerations. The FAA's objective is to avoid or minimize adverse environmental impacts that might flow from any proposed Federal action. Unless excepted by this order, an environmental impact statement, negative declaration, or prior finding affirmation is required for all proposed Federal actions related to airport development.
11. SPONSOR'S RESPONSIBILITY. Sponsors of airport projects are responsible for preparing an environmental impact assessment report containing a discussion and analysis of the environmental implications and impacts associated with the proposed action. Such a report shall be developed in coordination with appropriate local, state, and Federal agencies, with community involvement as described in this order, and in direct consultation with FAA. It is important that the material contained therein be objective, comprehensive, and accurate in order for it to serve as the basis for the preparation of the FAA's draft environmental impact statement or negative declaration. The sponsor's responsibility also extends to providing additional data and information to the FAA when required to assist in its review of environmental impacts and for use in the preparation of the draft and final impact statements.
12. FAA RESPONSIBILITY. The FAA is responsible for analyzing the environmental impacts and consequences of any proposed Federal action involving an airport development project, for preparing and circulating draft and final environmental impact statements, and ultimately for making the Federal Finding on the proposed action. Although an environmental impact assessment report submitted by an airport sponsor may be used in whole or in part, the FAA is responsible for the facts, opinions, and judgments upon which the finding or other environmental determination is based. It is, therefore, incumbent upon the FAA to assure that all documentation presents a full, accurate, and fair assessment of the environmental consequences of the proposed action.
13. USE OF CONSULTANTS. Consultants may be employed to prepare environmental impact assessment reports for airport sponsors. They may also be used to prepare background or supplemental material and otherwise assist in preparing a draft or final environmental statement for which the FAA takes responsibility. Care should be exercised in

selecting consultants to assure that the skills and effort to be provided are commensurate with the complexity and magnitude of the environmental assessment. In reviewing the work of consultants, FAA must insure that complete and objective consideration has been given to all relevant project impacts and alternatives, particularly if the consultant may expect further contracts based on the outcome of the environmental decision. During negotiations with a consultant, completeness and objectivity may be jeopardized if either the sponsor or the FAA indicates that a particular alternative is favored, or suggests that consideration of possible follow-on work should affect the negotiation.

14. LEAD AGENCY. CEQ Guidelines provide that:

"Where more than one agency (1) directly sponsors an action, or is directly involved in an action through funding, licenses, or permits, or (2) is involved in a group of actions directly related to each other because of functional interdependence and geographic proximity, to the maximum extent possible one statement should be prepared for all Federal actions involved. Agencies in such cases should consider the possibility of joint preparation of a statement by all agencies concerned, or designation of a single 'lead agency' to assume supervisory responsibility for preparation of the statement. Where a lead agency prepares the statement, the other agencies involved should provide assistance with respect to their areas of jurisdiction and expertise. In either case, the statement should contain an environmental assessment of the full range of Federal actions involved, should reflect the views of all participating agencies, and should be prepared before major or irreversible actions have been taken by any of the participating agencies. Factors relevant in determining an appropriate lead agency include the time sequence in which the agencies become involved, the magnitude of their respective involvement, and their relative expertise with respect to the project's environmental effects. As necessary, the Council on Environmental Quality will assist in resolving questions of responsibility for statement preparation in the case of multi-agency actions. Federal Regional Councils, agencies, and the public are encouraged to bring to the attention of the Council and other relevant agencies appropriate situations where a geographic or regionally focused statement would be desirable because of cumulative effects likely to result from multi-agency actions in the area."

Questions concerning "lead agency" decisions should be directed by the region to the Airports Planning Division, AAP-400, to be raised with CEQ through appropriate agency consultation channels. For projects serving and primarily involving land owned by or under the jurisdiction of another Federal agency, that agency may be the appropriate lead agency.

15. COMMUNITY INVOLVEMENT. While most requests for Federal financial assistance originate with a local public agency, the involvement of the community at large is a necessary element in the decision-making process. Communities, organizations (such as environmental, conservation, aviation and airspace user, public service, education, labor or business organizations), and other individuals affected by airport development proposals submitted to the FAA shall be provided an effective opportunity to comment at all appropriate stages in the decision-making process; and, in all cases, they shall be provided an opportunity to review and comment on draft statements and final statements. In accordance with Section 16(d) of the Airport Act, an opportunity for public hearings must be offered on any action involving location of a new airport, location of a new runway, or extension of a runway. For other actions, a public hearing should be considered in accordance with the guidelines contained in paragraph 57b of this order. FAA Advisory Circular 150/5050-4, Citizen Participation in Airport Planning, dated September 26, 1975, has additional specific guidance on community involvement.
16. INFORMATION AVAILABILITY. In accordance with the policy set forth in 49 C.F.R. 7.87(c), the FAA is responsible for making available environmental statements, comments received, and underlying documents to the public without charge to the fullest extent practical, or at a reduced charge which is not more than the actual cost of reproducing copies.
17. - 18. RESERVED.

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CHAPTER 3. ENVIRONMENTAL ACTION CHO

19. GENERAL.

a. All proposed Federal actions involving the airport development actions (including development of an airport layout plan) must be supported by a finding and resultant finding:

- (1) New airport site selection and development.
- (2) New runway.
- (3) Major runway extension.
- (4) Runway strengthening which would permit use by larger or noisier type of jet aircraft.
- (5) Major new construction or expansion of parking facilities with Federal funding.
- (6) Land acquisition associated with all land acquisition which causes relocation of business activities or involves land of the Department of Transportation.
- (7) Establishment or relocation of instrument approach lighting system (ALS), or runway lights (REILS) (when airport development).
- (8) Any airport development action that falls under paragraph 20 or which involves any of the following particularly described in paragraph 44:
 - (a) Use of any Department of Transportation land.
 - (b) Effect on property included in or on the National Register of Historic property of state or local historical, archaeological, or cultural significance.
 - (c) Wetlands or coastal zones.
 - (d) Endangered or threatened species.

b. The actions identified in subparagraph a. above must be supported through one of the following action choices:

- (1) Fully coordinated environmental impact statements (paragraph 20)
- (2) Negative declaration actions:
 - (a) As a result of changing a draft environmental impact statement (paragraph 21);
 - (b) Requiring limited coordination per Section 16(c)(4) of the Airport Act (paragraph 22); or
 - (c) Requiring limited assessment (paragraph 23).
- (3) Actions affirming prior findings (paragraph 24).

20. FULLY COORDINATED NEPA SECTION 102(2)(C) ACTIONS.

a. An environmental impact statement shall be prepared for the following proposed Federal actions:

- (1) Any action that has an effect that is not minimal on properties protected under Section 4(f) of the DOT Act or Section 106 of the Historic Preservation Act.
- (2) Any action that is likely to be highly controversial on environmental grounds.
- (3) Any action that is likely to have a significant impact on natural, ecological, cultural, or scenic resources of national, state, or local significance, including endangered species and wetlands.
- (4) Any action that is likely to be highly controversial with respect to the availability of adequate relocation housing.
- (5) Any action that:
 - (a) Causes substantial division or disruption of an established community, or disrupts orderly, planned development, or is determined to be not reasonably consistent with plans or goals that have been adopted by the community in which the project is located; or

- (b) Causes a significant increase in surface traffic congestion.
- (6) Any action that:
 - (a) Has a significant impact on noise levels of noise sensitive areas;
 - (b) Has a significant impact on air quality or violates the standards for air quality of an affected locality, the state, or the Environmental Protection Agency;
 - (c) Has a significant impact on water quality or may contaminate a public water supply system; or
 - (d) Is determined to be inconsistent with any Federal, state, or local law or administrative determination relating to the environment.
- (7) Other action that directly or indirectly affects human beings by creating a significant impact on the environment.
- b. In determining whether an environmental impact statement is required for a proposed Federal action, it is necessary to consider the overall, cumulative impact of the proposed action and the consequences of subsequent related actions. This is important because the effect of a number of decisions about a complex of projects can be individually limited to the extent that a negative declaration would appear to be appropriate for each project; however, when considered together, the projects may have a considerable cumulative impact. If an action would permit further contemplated actions (either by the FAA, another agency, or the sponsor), then in determining whether to prepare an environmental impact statement, the impacts of the further contemplated actions, as well as the impacts of the proposed action, must be considered. If an environmental statement is required, it must be processed before a commitment is made that would enable the further contemplated action or foreclose or narrow the consideration of alternatives to such contemplated action.
- c. A proposed Federal action is considered highly controversial when the action is opposed by a Federal, state, or local government agency or by a substantial number of the persons affected by such action on environmental grounds. If the responsible official has any doubt as to whether a given number of opposing persons is "substantial," that doubt should be resolved by processing the action as a highly controversial one. In an action involving relocation of persons or businesses, a controversy over the amount of the acquisition or relocation payments is not considered to be a controversy with respect to availability of adequate relocation housing.

- d. Details on processing and approval of these actions are contained in Chapter 7.

21. CHANGE OF DRAFT ENVIRONMENTAL IMPACT STATEMENTS TO NEGATIVE DECLARATIONS.

- a. During the processing of an environmental impact statement as discussed in Chapter 7, the FAA may conclude that the proposed action is not a major Federal action significantly affecting the quality of the human environment and therefore does not require the preparation of a final environmental impact statement pursuant to NEPA Section 102(2)(C). In this case, the appropriate action choice is to change the action and prepare a negative declaration. If a draft environmental impact statement has been circulated, then particular action is required as discussed in Chapter 8.
- b. This type of situation will occur when the environmental circumstances that prompted the draft statement have been dismissed, avoided, or eliminated. This may happen because of a change in the project, a change in the nature or degree of impacts, an inaccuracy in the data, or a misunderstanding of the facts contained in the draft statement. The reason for changing a draft environmental impact statement to a negative declaration must be specific, clearly established, and properly documented. It cannot be based merely on the absence of adverse comments by reviewing agencies. If the Section 102(2)(C) process was initiated because of opposition by a local, state, or Federal agency, written documentation must be obtained from the agency indicating that the opposition no longer exists.

22. NEGATIVE DECLARATION ACTIONS REQUIRING AIRPORT ACT SECTION 16(c)(4) COORDINATION.

- a. This action choice occurs when the proposed action involves the location of an airport, the location of a runway, or the major extension of a runway but does not have consequences bringing it within the scope of paragraph 20. A negative declaration must be supported by an environmental impact assessment report, prepared in accordance with Chapter 5 of this order, substantiating the determination that the proposed action will not significantly alter the airport's impact on its surrounding environment and is not highly controversial on environmental grounds.
- b. Pursuant to Section 16(c)(4) of the Airport Act, the Department of the Interior and the Environmental Protection Agency (by transfer of functions from the Department of Health, Education, and Welfare) must be consulted even in circumstances where a negative declaration is appropriate. Those agencies should be forwarded a copy of the negative declaration (and environmental impact assessment report) and advised that, although the project is not expected to significantly

affect the quality of the human environment, they are being consulted pursuant to Section 16(c)(4).

- c. FAA processing and approval of this action choice are described in Chapter 9.
- 23. OTHER NEGATIVE DECLARATION ACTIONS. This action choice applies to those projects which do not have circumstances bringing them within the scope of either paragraph 20 or 22 and which are not excepted under paragraph 25. Content, processing, and approval of this action choice are described in Chapter 10.
- 24. PRIOR FINDING ACTIONS. This action choice is applicable if, after a thorough review, it is found that the proposed project conforms to plans or projects for which an environmental impact statement or negative declaration concerning the environmental impact has been made; that the data and analyses contained in the previously approved documentation are still substantially valid insofar as they pertain to the proposed action; that preparation of a new environmental impact statement or negative declaration is not necessary; and that the prior environmental impact statement or negative declaration may be affirmed. Content, processing, and approval of this action choice are described in Chapter 11.
- 25. EXCEPTED ACTIONS. The following actions do not have the potential for causing a significant environmental impact and do not require an environmental impact assessment report:
 - a. Policy and planning documents not intended for direct implementation.
 - b. Grants of funds for airport system planning and airport master planning.
 - c. Airport planning, design, and development program advisory circulars issued by FAA as administrative and technical guidance to the public.
 - d. ADAP actions which are tentative and conditional and are clearly taken as a preliminary action to establish a sponsor's eligibility under ADAP.
 - e. Airport-related emergency actions.
 - f. All airport development actions other than those categories identified in paragraph 19a and not falling within the categories identified in paragraph 20.
 - g. The issuance of certificates and related actions under the Airport Certification Program (Federal Aviation Regulations, Part 139).
 - h. Advisory actions as described in paragraph 36.
- 26. - 29. RESERVED.

CHAPTER 4. SPECIAL ACTION CONSIDERATIONS

30. ASSESSING ALTERNATIVES.

- a. In determining which alternatives to consider, all actions that might reasonably be expected to accomplish the project objective should be identified for preliminary review. This should include actions that are not necessarily within the authority of the sponsor or the FAA to take, such as the selection of an airport site outside of the sponsor's jurisdiction, the use of another mode of transportation, air traffic operational constraints, and jurisdictional land use and zoning practices. If preliminary examination indicates that some or all of the alternative actions are unreasonable, those actions should be identified with a statement of the reasons for not considering them. Sufficient analysis of reasonable alternatives (including the alternative of taking no action) and their environmental benefits, costs, and risks should accompany the proposed statement through the review process to insure that consideration of the alternatives is not prematurely foreclosed.
- b. Both Section 16(c)(4) of the Airport Act and Section 4(f) of the DOT Act require a finding that "no feasible and prudent alternative" exists. The terms "feasible" and "prudent" are separate criteria and refer to sound engineering principles and sound judgment, respectively. A construction alternative, for example, may be feasible if, as a matter of sound engineering principles, it can be built. It may not be prudent, however, because of environmental, social, or economic consequences. Generally, the proposed action is that alternative which is feasible and prudent when, all factors considered (safety, efficiency, economic, social, and environmental), the benefits of the proposed alternative outweigh those of all other alternatives. For additional guidance relative to Section 4(f), see subparagraph 30d.
- c. Section 16(c)(4) of the Airport Act provides that the Secretary of Transportation shall authorize no project under the Airport Development Aid Program involving airport location, a major runway extension, or runway location found to have an adverse effect unless he shall render a finding in writing, following a full and complete review, that no feasible and prudent alternative to the project exists and that all possible steps have been taken to minimize such adverse effect. The degree of adverse effect on the environment is the primary factor in determining the detail required in assessing the feasible and prudent alternatives. A distinction is made here between adverse effect and significant adverse effect. This distinction is established in the course of the environmental assessment process, as follows: During the project planning stage, an environmental assessment is developed, and basic feasible and prudent

alternatives to accomplish the desired end are proposed. In assessing the feasibility of these alternatives, general broad scale environmental effects are considered and a development alternative is proposed which becomes the project described. When further detailed environmental assessment of the proposed alternative yields no significant adverse effect as identified in paragraph 20, then the initial assessment of the other alternatives is sufficient for Section 16(c)(4) purposes. However, if during this assessment it is determined that the proposed alternative falls under paragraph 20, then a more thorough investigation of other alternatives as called for in paragraph 46a is in order.

- d. Section 4(f) of the DOT Act provides that the Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or any land from an historic site of national, state, or local significance as determined by the officials having jurisdiction thereof unless there is no feasible and prudent alternative to the use of such land and such program includes all possible planning to minimize harm. Project development involving DOT Section 4(f) does not necessarily fall within the processing requirements of NEPA Section 102(2)(C). However, regardless of which action choice is appropriate, the documentation must contain an assessment of alternatives and evidence of planning to minimize harm to the Section 4(f) land, as more particularly described in paragraph 44f. To comply with Section 4(f), it is necessary to show that a rejected alternative to a proposed action presents unique problems, or that the costs or community disruption it entails reach extraordinary magnitudes.
- e. Determinations that the "do nothing" alternative does not exist as a feasible and prudent alternative will generally be made on the basis of comparisons of benefits and adverse effects. Consideration of alternatives at different locations which would satisfy project requirements should include comparisons of similar effects at each location.
- f. An alternative that would have substantially the same amount of environmental impact as the proposed action does not represent a prudent alternative if it would reduce the effectiveness of the project.
- g. As a minimum, a negative declaration shall consider the alternative of "do nothing."

31. CONSULTATION REQUIRED BY SECTION 16(c)(4).

- a. Section 16(c)(4) requires consultation with the Department of the Interior and the Environmental Protection Agency regarding the

effects certain types of airport projects may have on natural resources. When this consultation occurs as part of the Section 102(2)(C) coordination process, it must be made clear in the heading of the draft statement and in the transmittal that consultation is sought for purposes of both Sections 102(2)(C) and 16(c)(4).

- b. Differences of opinion that develop as a result of Section 16(c)(4) consultation should be resolved at the field level to the extent possible. Any unresolved issues, including objections on the adequacy of the assessment of impacts or alternatives or objections to the proposed Section 16(c)(4) action, should be identified and called to the attention of the responsible official. It should be noted that the role of the Department of the Interior and of the Environmental Protection Agency is one of consultation, not concurrence, on Section 16(c)(4) actions. After consultation, it is FAA's responsibility to give due consideration to the comments received and to make the decision as to whether the action should be approved pursuant to Section 16(c)(4), that no feasible and prudent alternative exists, and that all possible steps have been taken to minimize adverse effects.

32. AIRPORT LAYOUT PLAN APPROVALS.

- a. Applicability. This paragraph applies only to items of development approved for the first time by FAA, shown on a new or revised airport layout plan (ALP).
- b. General. Proposals to construct new runways, runway extensions, terminal buildings or other major and supportive development are shown on an ALP. Inclusion on the plan signifies only that the proposed development has been identified by public sponsors for planning purposes. It does not represent a commitment by the sponsor to implement the indicated development. FAA reviews the planned development with respect to safety, efficiency, and utility. FAA's action does not represent a commitment to provide financial assistance to implement the proposed plan.
- c. Approval.
 - (1) When all items of development covered by paragraph 19a of this order have been the subject of environmental findings pursuant to the provisions of this order, then the ALP may be approved unconditionally.
 - (2) When such environmental action has not been completed, the ALP may be approved subject to the following condition which shall be included in the ALP approval letter:

"The approval indicated by my signature is given subject to the condition that the proposed airport development identified by item herein as requiring environmental processing may not be undertaken

without prior written environmental approval by the FAA."

- (3) The approval letter will identify, by item, those items shown on the ALP which are covered by paragraph 19a and have not yet been environmentally approved by FAA.
- (4) The FAA approval of an ALP shall be indicated as follows:
 - (a) The FAA unconditional approval shall be shown on the face of the ALP by use of the term "approved."
 - (b) The FAA conditional approval shall be shown on the face of the ALP by use of the term "conditionally approved" and cross-referencing the ALP approval letter.

- 33. MASTER PLANNING GRANTS. Master planning grants are not considered major Federal actions for purposes of Section 102(2)(C) of NEPA; and, therefore, an environmental impact assessment report or statement is not required for issuance of the grant. Preparation of an environmental impact assessment report is usually included as one of the elements of the master plan, as is the preparation of a new or revised airport layout plan. The airport layout plan is the vehicle through which FAA acts with respect to airport planning and which is subject to the requirements in paragraph 32 of this order. The environmental impact assessment report may be submitted as a separate document or as an element of the master planning document. Assessment reports may be prepared to cover either the ultimate plan as developed by the study or stages of such development, depending on the independent utility of each stage and the certainty of ultimate development.
- 34. AIRPORT LOCATION APPROVAL. An airport development aid project for construction or land acquisition may not be approved unless the airport site is approved by the FAA. Federal approval of a proposed site is always preceded by an environmental assessment. If location selection is made as an initial phase of a master planning study, the environmental assessment must take into account enough of the ultimate planned development to assure that, with the best available information, the selection is based upon considerations that the need for and benefits of future development of the site outweigh any adverse environmental impacts.
- 35. AIR AND WATER QUALITY CERTIFICATION. Section 16(e)(1) of the Airport Act requires that applications for projects involving airport location, runway location, or a major runway extension shall not be approved unless the governor of the state in which the project is located certifies that there is "reasonable assurance" that the project will be located, designed, constructed, and operated in compliance with applicable air and water quality standards. To establish a "reasonable assurance," applicable standards and implementation requirements must

have been established and an official designated who has authority to enforce compliance with the standards. When standards have not been approved but applicable standards have been promulgated by the EPA, EPA's approval shall be obtained. Lack of objection to air and water quality considerations as set forth in the environmental impact statement may be construed as EPA approval. While the air and water quality certifications should be included in the final environmental impact statement whenever possible, their inclusion is not a prerequisite to approval of the statement if the statement includes documentation from the governor or appropriate state official indicating a reasonable expectation that the certification will be given. The state's certification or the EPA's approval must be received, however, before the project can be approved by the FAA.

36. ADVISORY ACTIONS. Some Federal actions, such as airspace actions, are of an advisory nature and are neither permissive nor enabling. Actions of this type are not ordinarily major Federal actions, and environmental assessments or statements are not required as a condition for accomplishing the action. If it is known or anticipated that some subsequent Federal action would require processing in accordance with environmental procedures, the advisory action should so indicate.
37. COMPATIBLE LAND-USE ASSURANCE. Section 18(4) of the Airport Act requires an assurance, satisfactory to the Secretary, that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft. FAA officials shall contact the sponsor and representatives of affected communities to encourage the development of compatible land-use controls early in the project planning stage. Appropriate assurances should be included in the environmental impact assessment report to document what is being done by the jurisdiction(s) with land-use control authority. An update on any prior assurances should also be included. For purposes of this order, reasonable assurance occurs when appropriate action has been or will be taken. What constitutes appropriate action depends on the jurisdictional land-use control capability of the sponsor. It is recognized that not all airport sponsors have direct jurisdictional control. However, sponsors are public agencies with a voice in the affairs of the community in which the airport development is undertaken and should be required, as a minimum, to use their best effort to assure proper zoning or other land-use controls near the airport. Depending on the sponsor capability, "appropriate action" could range from extension of such influence to acquisition of land in fee. It is the FAA official's responsibility to determine that appropriate action, constituting reasonable assurance, has been or will be taken.

38. LAND ACQUISITION. Public sponsors may have the authority to acquire land adjacent to existing airports or for new airports without prior approval by the FAA. Such action could prejudice or preclude a favorable decision by the FAA on proposed changes in airport layout or development which would use the land thus acquired or on requests for reimbursement for the property. When FAA is notified or becomes aware of a possibility that such a situation may be occurring, FAA will advise the public sponsor that such actions must be consistent with pertinent environmental policy as expressed in this order, that the manner in which the particular property was acquired will be carefully considered by the FAA prior to approval of any future FAA action involving the property, and that particular attention will be given by the FAA to its responsibilities under DOT Section 4(f) to insure that a special effort is made to preserve the natural beauty of the countryside, public parks and recreation lands, wildlife and waterfowl refuges, and historic sites. Particular attention will also be given by the FAA to actions by a sponsor involving properties on or eligible for inclusion in the National Register of Historic Places as well as the provisions of Title VI of the Civil Rights Act of 1964 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. A sponsor who has acquired land without prior approval by the FAA must demonstrate to the satisfaction of the FAA that his action was consistent with the policies expressed in this order and has not prejudiced full and objective consideration of alternatives or actually precluded possible implementation of a preferable alternative.
39. RELEASES FROM LAND COVENANTS. When a sponsor accepts a Federal airport development grant or a conveyance of Federal surplus property for airport purposes, he incurs specific obligations with respect to the uses of the property. FAA action is required to release a sponsor from his obligations in the event he desires to sell any of the airport property. This action requires an appropriate environmental assessment in accordance with the provisions of this order. The assessment must address all known and immediately foreseeable environmental consequences of the release action. In making the finding determination, the responsible Federal official should consider the effects of any covenants which will encumber the title and the extent of Federal ability to enforce these covenants subsequent to the release action. The standard conditions of release relative to the right of flight, including the right to make noise from such activity and the prohibition against erection of obstructions or other actions which would interfere with flight of aircraft over the land released, may be considered as mitigating factors in the environmental assessment, especially as regards noise impacts and land-use compatibility. When the intended use of released land is consistent with uses described and covered in a prior environmental assessment, the prior data and analysis may be used as input to the present assessment. When the conditions as set forth in paragraph 24 apply, a prior finding affirmation may be used to support the property release.

CHAPTER 5. CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT REPORTS
AND IMPACT STATEMENTS

40. GENERAL.

- a. Environmental impact assessment reports are the major source documents for consideration and evaluation of environmental aspects of airport-related decision making and become the primary basis for the environmental impact statements and negative declarations. The required information should be presented in an easily understood form and as concisely as possible to permit the responsible official to use it effectively. Illustrations and reproductions should be legible and free of clutter. Review may be facilitated by adhering to typical presentation format. However, it is recognized that environmental factors are often unique to a given project and adherence to a rigid format is not required. Content and format should be geared to the particular action. More attention should be paid to the more significant environmental issues and problems. Less important material may be summarized, consolidated, appended, or simply referenced.
- b. Environmental conclusions expressed in the text must be supported by appropriate reference to underlying studies, data sources, or other information considered in the preparation. As a general rule, the body of the document may include brief summaries of supporting data but should not be burdened with highly technical analyses or extensive detail. Such material is more appropriately included in appendices or by reference to separate texts or other literature as needed to support the environmental assessment. Reference data not attached to the document shall be available to the responsible official or any member of the public upon request.

41. ADD-ON PROCESS FOR ENVIRONMENTAL IMPACT STATEMENTS. Environmental impact statements may be constructed and organized with a view to adding sections in the progressive development of a final environmental impact statement. This add-on process permits responsible officials to examine the resolution of issues that were developed in the review process. The add-on process should not ordinarily be used if responses to substantive comments on the draft require extensive new material or otherwise make the composite statement confusing or difficult to follow. In such cases, the text of the draft should be revised as appropriate for use in the final statement.
42. DESCRIPTION. Each document should begin with a section describing the proposed Federal action, a statement of its purpose, and a description of the environment of the area affected, including any illustrating maps, photographs, and data necessary to adequately describe the action and affected area. Included in this section should be the following specific items:

- a. A concise description of the proposed Federal action, its purpose, and contemplated future related actions, including facility installations and procedural actions;
 - b. Location of the airport;
 - c. Existing and planned land uses and zoning in the airport-community area, including affected residential areas, public parks, wildlife and waterfowl refuges, wetlands and coastal zones, recreation areas, and historic sites;
 - d. Nearby schools and places of public assembly, hospitals, shopping areas, and adjacent political jurisdictions affected by the proposed development;
 - e. Other Federal or federally assisted activities in the affected area related to the proposed action (e.g., highways and other transportation projects, housing development and relocation, etc.), including a description of the interrelationships and cumulative environmental impacts of all related Federal projects in the planning and development stages;
 - f. Population, growth characteristics, and activity forecasts and assumptions used to justify the project and determine secondary impacts; and
 - g. A statement indicating how the proposed action conforms to or conflicts with the objectives and specific terms of approved or proposed Federal, state, regional, or local plans, policies, and controls, including comprehensive land-use plans and state Coastal Zone Management programs, if any, for the affected area. Efforts to reconcile any conflicts or inconsistencies should be described and documented.
43. BACKGROUND INFORMATION. A section to describe or discuss background information is often useful to help the reviewer appreciate circumstances related to the proposed action. This section should highlight development and environmental actions to date. This section may include such items as bond actions, action by the community or citizen groups pertinent to the proposal, or any other unique factors associated with the project which do not properly belong in another section of the document.
44. PROBABLE IMPACTS. The document shall describe and appraise probable impacts of the proposed action on the human and natural environment. The analyses shall include consideration of beneficial and adverse impacts as well as direct and indirect impacts and shall specify the actions to be taken to minimize those adverse effects that cannot be avoided. The amount of detail presented shall be commensurate with the extent and expected impact of the action. In discussing each of the

various impacts, it is important that the present environment be described sufficiently so that the predicted consequences of the action are assessed and understood in relation to the existing situation. Each project shall be examined for the presence of any of the following impacts, not necessarily in the following order:

a. Noise and Land Use.

- (1) Applicability. Noise impacts must be examined when project actions individually or cumulatively involve airport location, runway location, major runway extension, or runway strengthening which would permit operation by larger or noisier jet aircraft.
- (2) Requirements.
 - (a) The analysis shall include continuous contours of equal noise exposure using one of the following cumulative noise (or aggregated noise energy) methodologies: Noise Exposure Forecast (NEF), Composite Noise Rating (CNR), Day/Night Level (Ldn), Equivalent Noise Level (Leq), or Community Noise Equivalent Level (CNEL). As a minimum, such contours shall show the boundaries of all areas exposed to noise levels equal to or greater than NEF 30, CNR 100, Ldn 65, or equivalent for present conditions and forecast conditions with and without the proposed project. The effect on noise impacts resulting from other related actions, including installation of navigation aids and air traffic control procedures, shall be considered. The results of coordination and the positions of other affected FAA operating services on these aspects shall be included when applicable.
 - (b) For noise-sensitive areas identified as existing within the contours identified in (a), additional analysis is required if the proposed action is highly controversial because of noise impacts or if the areas identified will be exposed to jet operations for the first time or if the noise increase is greater than three units (NEF, CNR, Ldn) over that which would be created without the project. Such calculation of difference should include consideration of any noise abatement procedures which exist.
 - (c) When required by (b), additional analysis shall include information on average duration above 65, 75, 85, 95, 105,

and 115 dB(A) for a complete day's operation, for the evening period (7 p.m. to 10 p.m.), and for the night period (10 p.m. to 7 a.m.), for forecast conditions with and without the project. This information may be provided for selected points in intervals of not greater than 3,000 feet.

- (3) Effective Date. The noise analysis required by (2)(a) shall be included in all environmental impact assessment reports submitted to FAA after the effective date of this order. The additional analysis required by (2)(b) shall be included in all such reports submitted to FAA 12 months after the effective date of this order. All final environmental impact statements submitted to the responsible official for approval action shall contain the analyses required by (2)(a) 12 months after the effective date of this order and by (2)(b) 24 months after this effective date.
- (4) Content.
- (a) The noise analysis shall include sufficient information to permit lay and technical readers to relate noise exposure data to an understanding of its potential effects, including sufficient explanation of the noise descriptor(s) used in the assessment to convey the technical as well as the conceptual significance of the noise measures.
 - (b) The text and the graphics shall present the principal findings. Detail required to derive the findings shall be included in appendices, with appropriate reference in the text.
 - (c) The following graphics shall be included:
 - 1 Layout plan of the present, or proposed, airport indicating proposed development.
 - 2 Map(s) of the airport vicinity, including for each condition analyzed: runway location and orientation; present and planned land uses; noise-sensitive areas by type; zoning, property to be acquired, or other land-use controls; and continuous contours of equal noise exposure and related flight tracks superimposed by prominent, legible lines, appropriately labeled.

Aerial photographs, when available, are very helpful in illustrating the relation of the airport to surrounding land uses.

(5) Analysis.

- (a) The general literature on the effects of noise on man and on recommended land use or exposure criteria varies in depth, breadth, accuracy, and reliability. The use of such information is an effort by the FAA to make the state-of-the-art visible to the public. The use of such information and the level of detail necessary for noise impact assessment will vary with the level of impacts, the extent and nature of noise-sensitive areas affected, and the degree of interest in the project.
- (b) For purposes of Section 18(4) of the Airport Act, the noise impact assessment shall include documentation to support the sponsor's assurance that appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft.
- (c) The analysis shall include clear and concise references to source data, a discussion of noise from other than aircraft operations when the additive effect is significant, and a discussion of any nonstandard data or calculation procedures used in the analysis.
- (d) The analysis shall contain a discussion of the noise impact for each identified noise-sensitive area including size and location of residential areas exposed to specified noise levels, numbers of people and schools impacted, and such other information as may be necessary to describe the degree of incompatibility between the noise and existing or planned land uses (e.g., residential neighborhoods; educational, health, and religious structures and sites; and outdoor recreational, cultural, and historic sites).
- (e) The analysis shall, to the extent reasonable and based on available literature on the subject, include discussion of

potential effects of noise on hearing, communications and sleep interference, and annoyance, both within the context of outdoor activities as well as indoor activities. Consideration shall be given to the amount of acoustical protection provided by construction and architectural characteristics as well as climatological situations which might affect lifestyles and therefore alter the "average" interpretations placed on the effects of noise.

- (6) Records. The appropriate FAA regional or airports district office shall assure that sufficient information is retained to permit an independent review to recreate the complete noise exposure analysis.
- b. Air Quality. Air quality should be examined by estimating the pollution impact of the proposed action in terms of existing and forecast operations. Air pollutant concentrations as well as total amounts of pollutants should be estimated and evaluated as necessary for consistency with state implementation plans for air quality under the Clean Air Act and other applicable Federal, state, or local standards. Air pollution effects of increased surface traffic resulting from increased air traffic and enplaned passengers should be estimated and considered when affected by the project. Methods should be proposed or referenced for controlling and minimizing air pollution resulting from construction of the project.
- c. Water Quality. Water quality requirements, available water resources, and the impact on the existing water table should be considered when appropriate. Problems pertaining to treatment and disposal of wastes should also be considered and evaluated for consistency with applicable standards. Action taken to minimize pollution due to surface runoff, which may include infiltration of polluted runoff, from areas of extensive grading and paving should be discussed, including short-term and long-term effects of construction upon area drainage and aquifers.
- d. Social Impacts. Social and community impacts may occur as a consequence of some proposed project. When these impacts include displacement of people and businesses and/or disruption of established communities, the following information should be included in the document for the purpose of establishing that relocation can be managed. This information may need to be obtained from secondary sources and community sources.

- (1) An estimate of numbers and family characteristics of households to be displaced (e.g., minorities, income levels, renter or owner, elderly, large families).
 - (2) Effects of surface traffic disruption including effects on access to community facilities, recreation areas, and places of residence and business.
 - (3) Impact on the neighborhood and housing to which relocation is likely to take place.
 - (4) A description of businesses to be displaced and general effects of business dislocation on the economy of the community.
 - (5) Ability to provide adequate relocation housing for the types of families to be displaced and a description of actions proposed to remedy any insufficiency, including, if necessary, housing of last resort, as authorized by Section 206(a) of the Uniform Relocation and Real Property Acquisition Policies Act of 1970.
 - (6) Results of consultation with local officials, relocation or other social agencies, and community groups regarding the impacts. (A description of special relocation advisory services to be provided, if any, for the elderly, handicapped, or illiterate regarding interpretation of benefits and other assistance available.)
- e. Induced Socioeconomic Impacts. The location or expansion of an airport may produce significant secondary socioeconomic impacts on the community. These impacts may include shifts in the patterns of population movement and growth, public service demands, and changes in business and economic activity. The effects of these impacts should be estimated and discussed.
- f. DOT Section 4(f). It is necessary to identify publicly owned parks, recreation areas, wildlife and waterfowl refuges, and public or privately owned historic sites of local, state, or national significance affected by the proposed action. DOT Section 4(f) is applicable to the physical taking or other use of land so identified. The description of the land should include size, activities, patronage, access changes, unique or irreplaceable qualities, and relationship to other similarly used lands in the vicinity.

- (1) When there is an actual physical taking of Section 4(f) land in conjunction with the proposed action, there is no latitude for judgment regarding Section 4(f) applicability. When there is no physical taking but there is the possibility of use of Section 4(f) land, the FAA must determine if the activity associated with the proposed action conflicts with or is compatible with the normal activity associated with this land. The proposed action is compatible if it would not affect the normal activity or aesthetic value of a public park, recreation area, refuge, or historic site. When so construed, the action would not constitute use and would not, therefore, invoke DOT Section 4(f).
- (2) Any part of a publicly owned park, recreation area, refuge, or historic site is presumed to be significant unless there is a statement of insignificance relative to the whole park by the Federal, state, or local official having jurisdiction thereof. Any such statement of insignificance is subject to review.
- (3) Where Federal lands are administered for multiple uses, the Federal official having jurisdiction over the lands shall determine whether the subject lands are in fact being used for park, recreation, wildlife, waterfowl, or historic purposes.
- (4) Where property is owned by and currently designated for use by a transportation agency and a park or recreation use of the land is being made only on an interim basis, a Section 4(f) determination would not ordinarily be required.
- (5) Where the use of a property is changed by a state or local agency from a Section 4(f) type use to a transportation use in anticipation of a request for FAA approval, Section 4(f) should be considered to apply, even though the change in use may have taken place prior to the request for approval or prior to any FAA action on the matter. This is especially true where the change in use appears to have been undertaken in an effort to avoid the application of Section 4(f).
- (6) The physical taking or detrimental use of Section 4(f) land must be avoided if there is a feasible and prudent alternative, as described in paragraph 30.
- (7) If there is no feasible and prudent alternative to the use of such land, include a statement of actions taken or to be taken to minimize harm to the protected area including replacement of land and facilities and design measures such as planting or screening to mitigate any adverse effects. Replacement satisfactory to the Secretary of the Interior is specifically required for recreation lands aided by the Department of the

Interior's Land and Water Conservation Fund and for certain other lands falling under the jurisdiction of the Department of the Interior. Include evidence of concurrence or efforts to obtain concurrence of appropriate officials having jurisdiction over such land regarding actions proposed to minimize harm.

- (8) If land is involved which was acquired with Federal grant money (i.e., open space under Department of Housing and Urban Development; various conservation programs under Department of the Interior), the final documentation shall include appropriate communication with the grantor agency.
 - (9) Whether or not Federal agency lands are involved, the documentation shall reflect consultation with the Department of the Interior and, as pertinent, the Department of Housing and Urban Development or the Department of Agriculture, pursuant to the requirements of Section 4(f).
- g. Historical and Archaeological Sites. The document should specify actions to be taken to preserve and enhance districts, sites, buildings, structures, and objects of historical, architectural, archaeological, or cultural significance affected by the project.
- (1) By use of the National Register and National Register Criteria (36 C.F.R. Parts 60 and 800, published in the Federal Register on February 10, 1976), the document should identify properties that may be affected by the project that are included in or eligible for inclusion in the National Register of Historic Places. The National Register is published in its entirety each February in the Federal Register. Monthly additions and listings of eligible properties are published in the Federal Register the first Tuesday of each month. The Secretary of Interior will advise, upon request, whether properties are eligible for the National Register.
 - (2) If application of the Advisory Council on Historic Preservation's (ACHP) Criteria of Effect (36 C.F.R. Part 800) indicates that the project will have an effect upon a property included in or eligible for inclusion in the National Register of Historic Places, the document should state the effect. The effect should be evaluated in consultation with the State Historic Preservation Officer (SHPO), in accordance with the ACHP's Criteria of Adverse Effect (36 C.F.R. Part 800).
 - (3) A determination of no adverse effect should be documented with evidence of the application of the ACHP's Criteria of Adverse Effect, the views of the appropriate SHPO, and review of the determination by the ACHP.

- (4) If the project will have an adverse effect upon a property included in or eligible for inclusion in the National Register of Historic Places, the final environmental impact statement must include either an executed Memorandum of Agreement or comments from the ACHP and an account of actions to be taken in response to the comments of the ACHP. Procedures for obtaining a Memorandum of Agreement and the comments of the Council are found in 36 C.F.R. Part 800.
 - (5) To determine whether the project will have an effect on properties of state or local historical, architectural, archaeological, or cultural significance that are not included in or eligible for inclusion in the National Register, the responsible official should consult with the SHPO, with the local official having jurisdiction of the property, and where appropriate, with historical societies, museums, or academic institutions having expertise with regard to the property. Use of land from historic properties of Federal, state, and local significance as determined by the official having jurisdiction thereof involves Section 4(f) of the DOT Act and the document should include information necessary to support a Section 4(f) determination.
 - (6) The FAA has an agreement with the Department of the Interior for assuring compliance with the Archaeological and Historic Preservation Act of 1974, relative to mitigation of damage to archaeological and historic data incident to construction activities of FAA or FAA assisted projects. Preliminary surveys to identify the location of these cultural resources may be necessary in those cases where there is a reason to believe that such resources may exist and may be destroyed by the project and where such surveys have not yet been accomplished. The SHPO should be consulted to ascertain the need for any preliminary survey, including justification for such survey, and also to evaluate the significance of any cultural resources affected. Evidence of coordination with the SHPO should be included in the document. In addition, any identified irreplaceable loss or destruction of significant scientific, prehistorical, historical, or archaeological data shall be identified in the document with evidence of notice provided to the Secretary of Interior and measures described that will insure the recovery, protection, and preservation of such data, including preliminary survey, salvage, or other investigations appropriate to the case.
- h. Flood Hazard Evaluation. When a project under consideration encroaches on a flood plain, the document should include evidence that studies have been made and evidence that consultations with agencies with expertise have been carried out. In compliance with Executive Order 11296 and Flood Hazard Guidelines for Federal

Executive Agencies, promulgated by the Water Resources Council, the document shall describe measures necessary to handle flood hazard problems, including, when appropriate, measures to be taken during construction.

1. Considerations Relating to Wetlands or Coastal Zones. Where wetlands (including control, modification, impoundment, diversion, and channel deepening of streams or other bodies of water) or coastal zones are involved, the document should include:
 - (1) Information on location, types, and extent of wetlands areas that might be affected by the proposed action.
 - (2) An assessment of the impacts resulting from both construction and operation of the project on the wetlands and associated wildlife, and a statement of the measures to be taken to preserve, protect, and enhance wetlands and to avoid, to the fullest extent practical, drainage, filling, or interference with wetlands or the water resources supplying them.
 - (3) Statements by the local representative of the Department of the Interior, the Department of Commerce, the Corps of Engineers, and any other officials with special expertise concerning the impacts of the project on the wetlands, the worth of the particular wetlands area involved to the community and to the Nation, and recommending whether the proposed action should proceed and upon what conditions, if any.
 - (4) Information necessary to support a DOT Section 4(f) determination if the wetlands or coastal zones come under any of the 4(f) categories of publicly owned land of state, local, or national significance as determined by the officials having jurisdiction thereof. Wetlands subject to a publicly owned protective easement for provision of feed and nesting to migratory waterfowl are considered to be publicly owned land from a wildlife and waterfowl refuge under Section 4(f).
- j. Coastal Zone Management Programs. Where the proposed action is within or may affect the land or water uses in the area covered or which may be covered by a state coastal zone management program, the document shall include evidence of consultation with the state coastal zone management agency. If a state coastal zone management program has been approved by the Department of Commerce, the document shall include the following:
 - (1) A determination as to consistency with the approved state coastal zone management program, including a record of coordination as specified in the Coastal Zone Management Act. Federal

agencies are to insure consistency with state programs, to the fullest extent practicable.

- (2) If it is determined that the proposed project is inconsistent with the state's approved program, the responsible official shall not approve the action except upon a finding by the Secretary of Commerce that the proposed action is consistent with the purposes or objectives of the Coastal Zone Management Act or necessary in the interest of national security. The document shall include this finding, where warranted.
- k. Energy Supply and Natural Resources Development. Where applicable, the document should reflect consideration of whether the project will have any effect on either the production or consumption of energy and other natural resources and discuss such effects if they are significant.
- l. Construction Impacts. In general, adverse impacts during construction will be of less importance than long-term impacts of a proposal. Nonetheless, the document should appropriately address such matters as the following, identifying any special problem areas.
 - (1) Noise impacts from construction or delivery of materials through residential areas and any specifications providing maximum noise levels.
 - (2) Disposal of spoil and effect on borrow areas and disposal sites (include reference to pertinent specifications).
 - (3) Controls on air pollution from dust, burning, etc. (with reference to pertinent specifications or advisory circulars).
 - (4) Impacts on water quality from runoff and associated sedimentation and control measures (referencing specifications or advisory circulars).
- m. Wildlife and Waterfowl. In considering the effects of the project upon wildlife, it should be assumed that, although displaced wildlife may move to adjacent land areas, a long-term loss will accrue by virtue of reduction of the wildlife carrying capacity. Where part of a wildlife habitat is removed, the possibility that the remaining habitat is insufficient in size and quality to continue to support all resident species should be addressed. Any long-term losses may be described in general terms unless an endangered or threatened species is involved.
- n. Impacts Relating to Endangered and Threatened Species of Fauna and Flora. The document should include evidence that the proposed action will not jeopardize the continued existence of endangered or threatened species or result in the destruction or modification of critical habitat of these species.

- (1) If any species listed by the Department of the Interior as endangered or threatened exist in the area of the proposed action's potential impact, the document should provide evidence of consultation with the Regional Director of the Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMFS), as appropriate, regarding the impacts of the action on the species. The Fish and Wildlife Service, Department of the Interior, is responsible for protection of terrestrial and fresh water species; the National Marine Fisheries Service, Department of Commerce, is responsible for protection of marine species.
 - (2) The document should describe the anticipated effects of the proposed action and alternatives to the action on listed species, the nature of the listed species' habitat, and whether that habitat has been determined to be critical by the FWS or NMFS.
 - (3) The final document should summarize the results of consultation with FWS or NMFS and indicate any specific measures, including possible design or location alternatives, which will be taken to conserve listed species and to avoid destruction or modification of critical habitat.
- o. Light Emissions. Aviation lighting required for the purposes of security, obstruction clearance, and navigational guidance may create an annoyance among people in the vicinity of the installation. In this instance, documentation shall include:
- (1) Site location with a diagram of lights or light systems.
 - (2) Description of lights, as to their purpose, installation, beam angle and measurements, intensity, color, flashing sequence, and other pertinent characteristics of the particular system and its use.
 - (3) Measures to lessen any annoyance, such as shielding or angular adjustments.
45. ACTIONS TO MINIMIZE UNAVOIDABLE ADVERSE EFFECTS. Actions to be taken to minimize adverse environmental effects that cannot be avoided should be included in the discussion of each applicable impact category. The document should summarize these actions.
46. ALTERNATIVES. The document must evaluate thoroughly and objectively the environmental impact of all reasonable project alternatives, particularly those which would mitigate environmental impacts. To the extent that the impacts of alternatives are of the same type and significance, the

effects should be stated and compared with the proposed action, and the reasons given why the alternatives are rejected. The analysis of the environmental benefits, costs, and risks must be sufficient to show that an alternative that might enhance environmental quality or have a less detrimental effect has not been prematurely rejected or foreclosed. Rejection of the alternative of taking no action or postponing action pending further study must be supported by a detailed examination of the need for the project and the consequences of taking no action. When appropriate, satisfying the increased transportation needs by using other modes of transportation should be considered. Further discussion on assessing alternatives is contained in paragraph 30.

47. RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY. The document must examine the extent to which the proposed action involves tradeoffs between short-term environmental gains at the expense of long-term losses or long-term gains at the expense of short-term losses and the extent to which the proposed action forecloses or broadens future options.
48. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES. The document must examine the extent to which the proposed action would irreversibly and irretrievably curtail the range of beneficial uses of the environment including cultural as well as natural resources. If new, unusual, or limited sources or types of materials are involved in a project, a quantitative estimate and description should be included. Normally, labor and materials required to accomplish an airport development project do not significantly curtail the range of beneficial uses of the environment. Depletion of materials in short supply or significant irreversible changes in natural and cultural resources should be covered in this section.
49. CITIZEN INVOLVEMENT. A summary of citizen involvement and the holding of public hearings and meetings and any environmental issues raised should be documented with appropriate responses to the issues. Documentation of the public notice requirements for public hearings as covered in paragraph 57c shall be included, together with a summary or transcript of any public hearing held.
50. SUMMARY OF IMPACTS. It is generally desirable, especially for complex actions, to include in the document a summary of the significant points developed.
51. - 53. RESERVED.

CHAPTER 6. SPONSOR PROCESSING AND COORDINATION

54. CONSULTATION WITH FAA. The environmental process begins at the local level with the airport sponsor. A summary of the process is contained in Appendix 2. Early consultation between FAA and the airport sponsor and/or his consultant is necessary to review the various factors and the coordination process required in conjunction with the environmental assessment, including the following factors:
- a. Environmental action choices,
 - b. Key decision-making issues,
 - c. Alternatives,
 - d. Environmental assessment criteria,
 - e. Project schedule considerations,
 - f. Public involvement, including public notice,
 - g. Required coordination,
 - h. Reproduction and publication requirements, and
 - i. Follow-on assistance.
55. EARLY COORDINATION. In choosing among alternatives to accomplish the project objective, environmental factors require the same consideration as economic, technical, or other factors. Consequently, in developing the details of proposed alternatives, environmental feasibility should influence choices, along with economic and technical feasibility. Early coordination with appropriate Federal, state, and local agencies and with the community in the environmental assessment process will assist this consideration. Such coordination should be initiated as appropriate during the initial description and evaluation of alternatives, and continue during the development of the preliminary environmental impact assessment report, prior to the formal coordination that takes place during the A-95 review process. Early coordination can serve a number of purposes. It is an aid in the identification of environmental impacts and can help trigger advance planning of measures to mitigate environmental effects, including changes in project design. The community can be provided with timely information and have its opinions heard at the earliest formative stage of the project, which may avoid serious controversy later on. The amount of early coordination advisable will depend on the complexity, sensitivity, and anticipated environmental impacts of the proposed action. Information received during early coordination should be used in the environmental impact assessment report.

56. A-95 REVIEW.

- a. Review of proposed airport development actions by state and local government organizations routinely occurs through procedures set forth in the Office of Management and Budget (OMB) Circular No. A-95 (Revised). The purpose of the A-95 clearinghouse process is to assure that proposed federally assisted programs and projects are reviewed and evaluated in advance in terms of their potential impact on or conflict with statewide or areawide comprehensive planning or upon the plans and programs of local governments.
- b. The A-95 clearinghouse process for projects is set forth in Order 5100.17, Airport Development Aid Program (ADAP), Authority, Program Policy, Eligibility and Allowability Criteria (Book I).
- c. Under A-95 procedures, sponsors are required to notify the appropriate clearinghouses as soon as project planning has developed in sufficient detail to inform the clearinghouses of the nature and scope of the development proposed to be undertaken for which Federal assistance will be sought. This should take place at least 60 days prior to the date the sponsor submits its preapplication form requesting Federal assistance.
- d. During the initial clearinghouse review period, the preapplication for Federal aid may be completed. This period may also be used to complete the requirement for public hearings, if applicable. The A-95 procedure includes provision for consideration of the project's probable impact on the environment and input from areawide and local agencies authorized to develop and enforce environmental standards or which have expertise or jurisdiction with respect to environmental impacts. An appropriate vehicle to solicit such input is the preliminary environmental impact assessment report.
- e. The clearinghouse should be asked to inform known interested groups of the project. If either the sponsor or FAA has knowledge of such groups, this information should be given to the clearinghouse. During this same period, the clearinghouse may act as liaison between the agencies affected and the sponsor, arranging meetings and such other forms of consultation as may be necessary to work towards resolution of any problem raised by the proposed project.
- f. The comments and recommendations received through the A-95 clearinghouse process become input to the sponsor's environmental impact assessment report and ultimately must be reported and appropriately addressed in the FAA's environmental documentation.

57. PUBLIC HEARING.

- a. If a new airport location, a new runway, or an extension of an existing runway is involved, the sponsor must afford the opportunity for public hearings as required by Section 16(d)(1) of the Airport Act. The public hearing opportunity should normally be afforded prior to formal submission of a sponsor's environmental impact assessment report.
- b. In deciding whether a public hearing is appropriate in other cases, the FAA and sponsor should consider the following:
 - (1) The magnitude of the proposal in terms of environmental impact, economic costs, the geographic area involved, and the uniqueness or size of commitment of the resources involved;
 - (2) The degree of interest in the proposal, as evidenced by requests from the public and from Federal, state, and local authorities that a hearing be held;
 - (3) The complexity of the issue and the likelihood that information will be presented at the hearing which will be of assistance to the agency in fulfilling its responsibilities under the Act; and
 - (4) The extent to which public involvement already has been achieved through other means, such as earlier public hearings, meetings with citizen representatives, and/or written comments on the proposed action.
- c. In preparing for a public hearing, the sponsor is required to comply with the requirements in Section 152.73 of the Federal Aviation Regulations, including adequate public notice of:
 - (1) The intent to undertake the proposed airport development, with a concise description of the proposed development;
 - (2) The opportunity for a public hearing;
 - (3) The scheduling of a public hearing (time, date, and place), if requested by interested parties; and
 - (4) The availability and location of the preliminary environmental impact assessment report.

Notice of the hearing is required to be published in an areawide or local newspaper of general circulation.

- d. Additional information concerning the public hearing is contained in Advisory Circular 150/5100-7A. Hearings may be held by the sponsor simultaneously with the A-95 review process. The preliminary environmental impact assessment report is to be made available for public examination at least 30 days prior to the hearing and so noted in the hearing notification. Comments received through the A-95 process should be made available at the public hearing if the A-95 process has been completed. Copies of preliminary environmental impact assessment reports should be made available for review in accordance with anticipated public interest at convenient locations such as libraries, city halls, schools, and the airport manager's office. Consideration should be given to providing copies of assessment reports to interested persons or organizations without cost or at a price commensurate with the cost of reproduction and printing.
58. FAA SUBMISSION. Upon completion of local and state review, an environmental impact assessment report shall be submitted by the sponsor to the FAA. It shall include comments and recommendations made by or through the A-95 clearinghouse, a detailed summary of environmental issues developed in public hearings, and responses to comments on the preliminary environmental impact assessment report. This preliminary report shall be revised to the extent that the revision represents an appropriate response to comments received during the review process. The A-95 review process and public hearing need not be repeated if the preliminary assessment report effectively served its purpose as the vehicle for review. At least one copy of the transcript of public hearings must be obtained by the sponsor for his record. The sponsor must furnish a copy of the transcript to FAA upon request. The number of copies of documentation submitted to the FAA should be determined by consultation with the FAA and should include a copy designated as a reproducible master which should be of good quality.
59. RESERVED.

CHAPTER 7. FAA PROCESSING AND APPROVAL OF FULLY
COORDINATED NEPA SECTION 102(2)(C) ACTIONS

60. GENERAL.

- a. This section applies to proposed Federal actions requiring an environmental impact statement. The FAA is responsible for evaluation and resolution of environmental issues included in the impact statements. In order to insure accurate descriptions and environmental assessments, site visits by FAA personnel should be made whenever practical.
- b. Documentation developed in the local and state review process may be incorporated into the FAA's draft statement. If the FAA is the proponent of the proposed action, local and state review may be initiated simultaneously with the Federal review. Steps will be taken to secure such additional information as needed to insure that the draft statement is adequate for intergovernmental coordination. The Federal review process does not constitute an agency commitment to approve the proposed action.
- c. Draft environmental impact statements shall be reviewed by affected FAA program divisions and staff officers at the regional level prior to filing or public review. This internal review is to assure that related foreseeable agency actions by other FAA elements are properly covered in the draft statement and are coordinated with the appropriate action office so that commitments which are the responsibility of other divisions or offices will be carried out.
- d. Copies of the draft statements shall be made available to organizations and individuals at no charge to the extent practical or at a fee commensurate with the cost of reproducing copies for the required intergovernmental coordination.
- e. In addition to the data from the environmental impact assessment report and other documentation developed in the local and state review, draft statements shall contain the following:
 - (1) Each statement shall indicate the organization involved and the public law applicable to the proposed action. For example:

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
DRAFT ENVIRONMENTAL IMPACT STATEMENT

This statement is submitted for review pursuant to the following public law requirements: Section 102(2)(C) of P.L. 91-190, 42 U.S.C. 4321; Section 16(c)(4) of P.L. 91-258; Section 4(f) of P.L. 90-495.

- (2) Each draft statement shall be prefaced by a summary in the format shown in Appendix 1 of this order.
- (3) Pursuant to the January 9, 1973, memorandum for heads of departments and agencies from the Director, OMB, and the Chairman, Council on Environmental Quality (CEQ), on the subject of state and local review of impact statements, all comments on the environmental effects of the project received through the A-95 process, either by the clearinghouse or by state and local environmental agencies through the clearinghouse, must be enclosed with the draft impact statement. All substantive comments received from individuals and responses thereto and either a summary or transcript of any public hearing will also be made a part of the draft statement. Copies of the draft statement are to be sent to each agency making such comments. These agencies may elect to comment again, depending in part on the extent to which their earlier comments were considered in preparing the draft statement. Review of the draft statement may be secured through the clearinghouse or directly with the state and local agencies involved. In some states, the governor may have designated a specific agency, other than the clearinghouse, to secure review of the impact statements. In any case, copies of the draft statement should be sent to the clearinghouses and to affected cities and counties. A time limit for review commensurate with that for Federal review may be established and should be specified in the transmittal.

61. DISTRIBUTION FOR FEDERAL REVIEW.

- a. Distribution for Headquarters' Review and to CEQ. Six copies of the draft environmental impact statement including the A-95 comments and the summary sheet are to be forwarded to the Office of Airports Programs (Attention: AAP-400) which shall be responsible for further distribution within the FAA and DOT. Regions shall send five copies of the draft statement directly to CEQ, addressed as follows:

General Counsel
Council on Environmental Quality
722 Jackson Place, N. W.
Washington, D. C. 20006

Agencies commenting on the draft statement are required to file copies of their comments directly with CEQ as well as with FAA per Section 1500.11(a) of CEQ Guidelines issued August 1, 1973, (40 C.F.R. 1500). These comments are to accompany and become a part of the final environmental impact statement.

b. Intergovernmental Coordination.

- (1) Agencies consulted by the FAA in connection with preparation of environmental impact statements are those which have "jurisdiction by law or special expertise with respect to any environmental impact involved," or which are "authorized to develop and enforce environmental standards." These Federal agencies include components of (depending on the aspect or aspects of the environment involved):

Environmental Protection Agency
Department of Agriculture
Department of Commerce
Department of Defense
Department of Health, Education and Welfare
Department of Housing and Urban Development
Department of the Interior
Department of Transportation
Energy Resources Development Administration
Advisory Council on Historic Preservation
Federal Energy Administration (five copies)

- (2) For action specifically affecting the environment within their regional jurisdictions, the following Federal agencies are also to be consulted:

National Capital Planning Commission
Delaware River Basin Commission
Tennessee Valley Authority
Appalachian Regional Commission
Susquehanna River Basin Commission

- (3) Airports regional offices shall determine which of the above agencies to consult. (Guidance is contained in Appendix 7 of Order 1050.1B.) In seeking comment, FAA airports regional offices may establish a time limit of not less than 45 days for reply after which, if no comments are received, it may be presumed that the agency consulted has no comments to make. Fifteen-day extensions should normally be granted when requested by other agencies. Time limits should take into

account the magnitude and complexity of the statement and degree of public interest in the project.

- (4) All draft Section 102(2)(C) statements will be coordinated with the appropriate regional offices of other Federal agencies having the necessary expertise or jurisdiction, except that statements to be coordinated with any component of DOI or the Department of Commerce (DOC) shall be sent directly to the Washington headquarters of these departments (see paragraph 61b(6) below). Appendix 7 of Order 1050.1B contains the addresses of the Federal agency offices.
- (5) Five copies of draft statements shall be sent to the appropriate regional office of EPA. Comments from EPA are categorized according to the following criteria:

The impact is rated by EPA as follows:

LO - Lack of Objections,
ER - Environmental Reservations, or
EU - Environmentally Unsatisfactory.

The statement adequacy is categorized by EPA as:

1 - Adequate,
2 - Insufficient Information, or
3 - Inadequate.

Further explanation of these codes is contained in Appendix 8 of Order 1050.1B.

All EPA comments on the draft statement are sent to cognizant FAA offices and will be available to the public.

- (6) All draft Section 102(2)(C) environmental statements needing DOI and/or DOC review should be sent directly to:

Assistant Secretary - Program Policy
ATTN: Director, Environmental Project Review
Department of the Interior
Washington, D. C. 20240

and/or

Office of the Deputy Assistant Secretary for
Environmental Affairs
U. S. Department of Commerce
Washington, D. C. 20230

When Section 16(c)(4) of the Airport Act and/or Section 4(f) of the DOT Act are involved, it is especially important to note this fact in the heading and in the transmittal to DOI to assure completeness of their review. The number of copies to be furnished DOI for its intradepartmental use to facilitate orderly and timely review by its several bureaus and offices is as follows:

- (a) Twelve copies for projects in each state except those listed in (b) and (c) below.
- (b) Thirteen copies for projects in North and South Dakota, Nebraska, Kansas, Oklahoma, and Texas.
- (c) Fourteen copies for projects in Alaska, Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

For projects involving Section 4(f) of the DOT Act, no additional copies are required. However, DOI routinely requires 60 days to review Section 4(f) statements. Nothing in this order is intended to preclude sending of preliminary statements or engaging in other forms of consultation with field offices of DOI for technical assistance or advance information for the purpose of effecting improved coordination.

- (7) CEQ publishes weekly in the Federal Register a list of environmental statements received during the preceding week. On draft statements, this date of publication normally determines the beginning of the 90-day minimum period for fully coordinated Section 102(2)(C) statements before which no administrative action to commit the project can take place.
- (8) An amendment or supplement may be filed with CEQ by the FAA on a draft or final environmental impact statement. In such a case, AAP-400 should consult with AGC and TES concerning the possible need for or desirability of filing an amendment or supplement or recirculation of the revised statement for an appropriate period.

62. PUBLIC NOTICE.

- a. Each regional office shall formulate a system for announcing that a draft environmental impact statement has been prepared and is being circulated for intergovernmental coordination and that comments are being solicited on the environmental impact of the proposed project. The announcement shall be made through the appropriate media in the area affected and in cooperation with the

sponsor of the project. Information on availability of the statement shall be contained in the announcement. Copies of the draft environmental statement should be sent to parties with a known interest in the proposed project. In addition to FAA regional and district offices, the statement shall be made available for review at the sponsor's office, local public libraries, and at other appropriate locations of general public access. The regional office may call upon the regional public affairs office to assist in publicizing the status and availability of impact statements.

- b. Three additional copies of draft statements involving controversial projects should ordinarily be provided to the Office of Airports Programs, Attention: AAP-400.
- c. A number of extra copies of draft statements should be provided free of charge or at a fee commensurate with the cost of reproduction when projects are expected to generate unusual public interest.

63. PREPARATION AND REVIEW OF FINAL IMPACT STATEMENT.

- a. Content of the final environmental impact statement normally includes the draft statement and any additional documentation developed in the Federal review as well as the information listed below. However, if the complexity of the issues and comments are such that a complete revision of the text of the statement would best respond to the environmental considerations, the final statement may be a rewritten document which integrates the responses to comments on the draft statement within the final text. Documentation in the final statement shall include:

- (1) The Federal Finding signed by the responsible official which will normally be the first document in the final statement package. The Federal Finding may be incorporated in the environmental decision memorandum.
- (2) The summary required by CEQ Guidelines.
- (3) The body of the environmental impact statement titled at the top of the first page as indicated in paragraph 60e(1). The text shall refer to the documents containing the required consultation and assurances.
 - (a) For all airport development there shall be evidence to support the following ADAP grant assurances as required by the Airport Act.

- 1 The project is reasonably consistent with existing plans of planning agencies for development of the area (Section 16(c)(1)(a));
 - 2 Fair consideration has been given to the interest of communities in or near the project location (Section 16(c)(3));
 - 3 Appropriate action has been or will be taken to restrict, to the extent reasonable, the use of land in the vicinity of the airport to purposes compatible with airport operations (Section 18(4));
 - 4 Appropriate air and water quality certificates have been or will be obtained (Section 16(e)).
- (b) For projects involving an airport location, runway location, or major runway extension pursuant to Section 16(c)(4) of the Airport Act, there shall be evidence to support a conclusion that:
- 1 There is no feasible and prudent alternative, and
 - 2 All possible steps have been taken to minimize adverse effects.
- (c) For projects involving the use of lands subject to Section 4(f) of the DOT Act, there shall be evidence to support a conclusion that:
- 1 There is no feasible and prudent alternative to the use of such land, and
 - 2 The project includes all possible planning to minimize harm to such lands resulting from such use.
- (d) For projects involving the displacement and relocation of people, there shall be evidence to support assurances that:
- 1 Fair and reasonable relocation payments and assistance have been or will be provided pursuant to provisions in Title II of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970.
 - 2 Comparable decent, safe, and sanitary dwellings are available or will be built if necessary prior to actual displacement.

- (e) For all projects, there shall be evidence of the consultation and coordination (as described under paragraph 44) that is required for each applicable area of environmental consideration, including documentation that such consultation has been taken into account.
- (4) All substantive comments received on the proposal shall be included in the final statement. If the statement has not been revised since the draft stage, each comment shall be listed and followed by appropriate response or reference to where the subject is covered in the statement. For revised final statements, comments may be dealt with in the body of the statement. Copies of all substantive commenting letters shall also be included. Any unresolved environmental issues and efforts to resolve them, through further consultation or otherwise, should be identified and discussed in the statement. For instance, where an agency comments that the statement has inadequate analysis or that the agency has reservations concerning the impacts or believes the impacts are too adverse for approval, either the issue should be resolved or the final statement should reflect efforts to resolve the issue and set forth any action that will result.
- b. The distribution of the proposed final environmental impact statement shall be accomplished in one of the following ways:
 - (1) When approval authority is retained by headquarters, five copies of the proposed final environmental impact statement, including the summary sheet and the Federal Finding, and containing copies of and responses to comments by other Federal agencies and other organizations or individuals who have commented on the draft, are to be forwarded to AAP-400 for final action. (If the project has generated public interest, a check should be made with AAP-400 to determine if extra copies are needed.)
 - (2) When approval authority is delegated to the Regional Director and concurrence by headquarters is requested, two copies are to be forwarded to AAP-400 for action.

64. APPROVAL OF FINAL IMPACT STATEMENT.

- a. General. The decision to implement an airport project is made subsequent to the approval of the final environmental impact statement. This decision to implement occurs when the appropriate official reviews all project requirements and determines that an action can and should be taken. Project approval and issuance of the

grant offer, therefore, follow review and approval of the environmental impact statement and are usually the actions for which the statement is prepared.

- b. Legal Review. All Section 102(2)(C) environmental impact statements shall be reviewed for legal sufficiency by the Chief Counsel (AGC) or his designee. Statements involving Section 4(f) of the DOT Act shall be reviewed by headquarters' legal counsel.
- c. Delegation of Authority. Final approval authority on environmental impact statements for airport development projects has been delegated to the FAA but subject to prior concurrence by the Assistant Secretary for Environment, Safety, and Consumer Affairs (TES) for projects in the following categories:
 - (1) Any new airport serving a metropolitan area (construed as an SMSA unless specifically directed otherwise).
 - (2) Any new runway or runway extension for an airport, any part of which is located in an SMSA and is either certificated under Section 612 of the Federal Aviation Act of 1958, as amended, or used by large aircraft (except helicopters) of commercial operators.
 - (3) Any project to which a Federal, state, or local governmental agency has expressed opposition on environmental grounds.
 - (4) Any project for which TES requests an opportunity to review and concur in the final statement, or for which FAA requests such review and concurrence by TES.
 - (5) Any projects in the above categories which also fall under Section 4(f) of the DOT Act will also require concurrence by the DOT Office of the General Counsel (TGC).

The Assistant Administrator, Office of Airports Programs, has final impact statement approval authority for any project in categories (1) through (4) above, subject to prior review for legal sufficiency by AGC and concurrence by TES and TGC as required. All other Section 102(2)(C) actions may be approved by the regional director, after review for legal sufficiency by regional counsel and subject to concurrence by the Assistant Administrator, Office of Airports Programs, and AGC, when such concurrence is requested upon headquarters' review of the draft statement or when requested by the regional director.

- d. Headquarters' Review. When final approval of an environmental statement is retained in headquarters, the headquarters coordination is initiated when statements are received in the Office of Airports Programs. Copies are forwarded by AAP-400 to AEQ, AGC for review for legal sufficiency, and then to appropriate elements of OST when required for review and concurrence with a request for response within 15 to 30 days depending upon the complexity of the statement. Following headquarters' review, the statement is revised as necessary or additional information may be added. The statement, with any comment, is then submitted to the Assistant Administrator, Office of Airports Programs, for approval.
- e. Federal Finding. Each final environmental impact statement must contain a Federal Finding signed by the responsible official with appropriate concurrences as discussed above. The Finding must be appropriate for the proposed action. For projects that meet the conditions set forth by all applicable environmental laws, guidelines, and procedures, a Finding that approximates the following is usually sufficient:

"After careful and thorough consideration of the facts contained herein and following consideration of the views of those Federal agencies having jurisdiction by law or special expertise with respect to the environmental impacts described, the undersigned finds that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in Section 101(a) of the National Environmental Policy Act of 1969."

When appropriate for Section 16(c)(4) of the Airport Act (and/or Section 4(f) of the DOT Act) the Finding shall also include the following:

"It is also determined that there is no feasible and prudent alternative to the proposed action (and/or to use of lands covered by Section 4(f) of the Department of Transportation Act of 1966, as amended); and further, the proposed action includes all possible steps to minimize any adverse effects (and/or all possible planning to minimize harm to such lands)."

In all instances, continue with the following:

"Having met all relevant requirements for environmental consideration and consultation, the proposed action is authorized to be taken at such time as other requirements have been met and subsequent to expiration of waiting periods established to inform CEQ and the public of this action."

65. FINAL DISTRIBUTION AND NOTIFICATION.

- a. General. Distribution of final environmental impact statements to EPA, other agencies and organizations, CEQ, and the public should, insofar as possible, be simultaneous so as to avoid unnecessary inquiries and insure that all interested parties have a fair opportunity to review the documentation. The implementing administrative action for the project can take place no sooner than 30 days after the release date, which is the last of the following three notification actions -- the date the statement was filed with CEQ or was provided to the commenting agencies or was made available to the public.
- b. Distribution to EPA. The FAA regional office preparing the final environmental impact statement shall forward to EPA one copy of the final statement if it was categorized LO-1. Otherwise, five copies shall be sent to EPA. In the event that EPA has comments on a final impact statement, the FAA regional office shall make every reasonable effort to resolve any conflicting issues. If the issues cannot be resolved, the matter shall be referred to AAP-400.
- c. Other Distribution by the Region. A copy of the final environmental impact statement shall also be sent to each Federal, state, and local agency and private organizations which made substantial comments on the draft statement and to individuals who requested a copy of the final statement or who made substantive comment on the draft. The sponsor of the project shall also be sent a copy as well as the appropriate state and areawide clearinghouses unless otherwise designated by the governor. When the number of commentators is such that distribution in this manner is impracticable, alternative arrangements shall be made after consultation with CEQ and DOT through AAP-400.
- d. Distribution to CEQ. The region will distribute to CEQ the required five copies of final statements. The region will forward the copies directly to:

General Counsel
Council on Environmental Quality
722 Jackson Place, N. W.
Washington, D. C. 20006

A copy of the transmittal shall be sent to AAP-400 for information.

- e. Distribution to AEQ. The region will send one copy to AEQ-1 for information and for ultimate transmission by AEQ to the DOT Library.

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f. Availability to Public.

- (1) Additional copies shall also be made available by the region to the public for review by distribution to appropriate locations accessible to the general public.
- (2) The availability of the final statement shall be announced in the appropriate local media in a manner similar to the announcement method for the draft environmental impact statement.

66. IMPLEMENTATION OF ENVIRONMENTAL COMMITMENTS. Steps will be taken through funding agreements, contract plans and specifications, and other appropriate follow-up actions to assure that representations made in the environmental documentation with respect to mitigation of environmental impacts will be carried out. Any proposed deviation from prescribed action that may reduce protection to the environment must be reviewed at the same level at which the initial environmental approval was given. The proposed deviation shall be reviewed by TES, if TES concurred in the initial approval.

67. - 69. RESERVED.

CHAPTER 8. FAA PROCESSING AND APPROVAL TO CHANGE
A DRAFT ENVIRONMENTAL IMPACT STATEMENT TO A NEGATIVE DECLARATION

70. GENERAL.

- a. If there is some doubt as to the potential of an action for significant impact, early consultation with appropriate governmental or private agencies should be undertaken to resolve questionable areas. This may include sending the environmental impact assessment report to selected agencies for their review and comment, with a cover letter explaining the issue. Upon evaluation of information received through this consultation and coordination or from other sources, the regional office will determine whether the action should or should not be processed pursuant to Section 102(2)(C) of NEPA.
- b. Notwithstanding the above precautions, there may still be cases in which, after circulation of a draft environmental impact statement, the FAA finds that the proposed action will not significantly alter the airport's impact on its surrounding environment and is not highly controversial on environmental grounds and therefore does not require the preparation of a final environmental impact statement pursuant to Section 102(2)(C). The FAA may then change the action and prepare a negative declaration.
- c. The general requirements for processing a draft statement, distributing it for Federal review, and giving public notice are the same as those set forth in paragraphs 60, 61, and 62 for a fully coordinated NEPA Section 102(2)(C) action.

71. DOCUMENTATION.

- a. Documentation to support a decision to change a draft environmental impact statement to a negative declaration shall include:
 - (1) The Federal Finding supporting the conclusion that the action will not result in significant environmental impact and is not highly controversial.
 - (2) The summary similar to that shown in Appendix 1, except that the heading shall read "Negative Declaration" and a sentence shall be added to explain that the draft environmental impact statement was changed to a negative declaration.
 - (3) The draft environmental impact statement shall be included as part of the negative declaration package. If not contained in the draft statement, additional supportive evidence must be

supplied for all applicable environmental considerations and required assurances. Reference paragraph 63a(3).

- (4) All substantive comments received through the Federal review process shall be included in the negative declaration package. Each comment shall be listed with appropriate reference to the draft statement and/or such additional response as may be necessary to dispense with the issue raised. If the draft is revised and resubmitted, comments may be dealt with in the body of the statement. To the extent that impacts have been identified in the draft statement as having the potential for significant impact, supplemental data in the documentation must reveal that such potential has been eliminated. Elimination of the potential for significant impact can occur when the project has been changed, something in the impacted environment has changed, or because subsequent data has revealed an inaccuracy or misunderstanding of earlier information, measurements, or other factors. Any controversy which led to the preparation and circulation of a draft statement must be resolved or withdrawn. If the conditions which prompted the preparation of the draft statement are not specifically dismissed in an adequate manner, the draft environmental impact statement cannot be changed to a negative declaration.

- b. The distribution of the negative declaration package shall be accomplished in the same manner and with the same number of copies as a proposed final environmental impact statement (reference paragraph 63b).

72. APPROVAL.

- a. Approval Authority. The Assistant Administrator, Office of Airports Programs, has the authority to approve the negative declaration for any project identified in paragraph 64c except that TES and TGC concurrence is not required. Approval is subject to review for legal sufficiency by AGC. For projects not subject to TES concurrence, the negative declaration is approved by the regional director, subject to regional counsel review and AAP and AGC concurrence per paragraph 64c.
- b. Federal Finding. The Finding for this action should approximate the following:

"A draft environmental impact statement for the proposed action has been prepared and federally coordinated in the manner contemplated by Section 102(2)(C) of the National Environmental Policy Act of 1969. A careful and thorough

evaluation of the facts contained in the draft statement, and consideration of the comments received from the public and other Federal agencies having jurisdiction by law and special expertise in environmental matters, now supports a determination that the proposed action is not highly controversial and will not significantly affect the quality of the human environment."

When appropriate for Section 16(c)(4) of the Airport Act (and/or Section 4(f) of the DOT Act), the Finding shall also include the following:

"It is also determined that there is no feasible and prudent alternative to the proposed action (and/or to use of lands covered by Section 4(f) of the Department of Transportation Act of 1966, as amended); and, further, the proposed action includes all possible steps to minimize any adverse effects (and/or all possible planning to minimize harm to such lands)."

In all instances, continue with the following:

"Having met all relevant requirements for environmental consideration and consultation, the proposed action is authorized to be taken at such time as other requirements have been met."

73. FINAL DISTRIBUTION AND NOTIFICATION.

- a. Distribution. When the decision to change a draft statement to a negative declaration is made, a distribution of the negative declaration package as described in paragraph 71a shall be made in a manner similar to that for a fully coordinated Section 102(2)(C) action (reference paragraphs 65b, c, and d). The final 30-day CEQ review period is no longer applicable, and the implementing administrative action can take place any time after termination.
- b. Public Notification. The decision to change a draft impact statement to a negative declaration should be publicized in the appropriate local media in the same manner as was the draft statement. Copies of the negative declaration need not be distributed, although copies must be made available upon request.

74. IMPLEMENTATION OF ENVIRONMENTAL COMMITMENTS. Any representations made in the environmental documentation with respect to minimization of adverse environmental effects shall receive the same follow-on action and review as for NEPA actions as described in paragraph 66.

75. - 79. RESERVED.

CHAPTER 9. FAA PROCESSING AND APPROVAL OF
AIRPORT ACT SECTION 16(c)(4) COORDINATED ACTIONS

80. GENERAL.

- a. This paragraph applies to airport development actions for which limited Federal coordination is required pursuant to Section 16(c)(4) of the Airport Act but do not otherwise fall within the requirements for fully coordinated NEPA Section 102(2)(C) actions (reference paragraph 22).
- b. The general requirements for preparation and processing of draft statements as set forth in paragraphs 44 and 60 are equally applicable to Section 16(c)(4) coordinated actions except that the heading on the report shall read "Negative Declaration/Section 16(c)(4) Coordination." A summary is not required.

81. DISTRIBUTION FOR FEDERAL REVIEW.

- a. Distribution of Section 16(c)(4) negative declarations by airports regional offices for review is limited to the Office of Airports Programs, EPA, and DOI. The negative declaration, including A-95 clearinghouse comments and any other substantive comments received and responses thereto and the summary or transcript of any public hearing held (or evidence that it was offered), shall be distributed as follows:
 - (1) One copy to the Office of Airports Programs (Attention: AAP-400).
 - (2) Five copies to EPA regional offices.
 - (3) The same number of copies to DOI as required for draft environmental impact statements, sent directly to the same address in Washington as given in paragraph 61b(6).
 - (4) It may be necessary to send copies to the Department of Agriculture or the Department of Housing and Urban Development if DOT Section 4(f) land is involved in the action.
- b. Copies of negative declarations to EPA and DOI are to be accompanied by a transmittal letter explaining the purpose for the consultation as described in paragraph 22b. A time limit for review of not less than 45 days shall be established after which it may be presumed that the agency consulted has no comments to make.

- c. The copy received by the Office of Airports Programs will receive limited review for the purpose of evaluating the quality of the Section 16(c)(4) negative declarations. No concurrence by the Office of Airports Programs on individual 16(c)(4) actions is required. No further distribution is made within FAA or DOT headquarters, nor are any copies filed with CEQ.
82. PUBLIC NOTICE. The regional office shall formulate a system for announcing the availability of the negative declaration through appropriate media in the area affected and in cooperation with the sponsor of the project. The announcement shall indicate the availability of the negative declaration for review which shall include FAA regional and district offices, the sponsor's office, local public libraries, and other appropriate locations of general public access. Copies of negative declarations shall be provided, on request, free of charge or at a fee commensurate with the cost of reproduction.
83. DOCUMENTATION. Documentation to support approval of the Section 16(c)(4) coordinated action shall include:
- a. The Federal Finding supporting the conclusion that the action will not result in significant environmental impact, that there is no feasible and prudent alternative, and that all possible steps have been taken to minimize adverse effects.
 - b. Supporting evidence for all applicable environmental considerations and required assurances. Reference paragraph 63a(3). It should be noted that the requirements for consultation and documentation as described under paragraph 44 for applicable environmental considerations also pertain to Section 16(c)(4) actions (e.g., historical and archaeological site considerations, DOT 4(f) lands, wetlands and coastal zones, endangered species).
 - c. The negative declaration.
 - d. All substantive comments received through the consultative process. If any such comment takes issue with the preliminary conclusion that there are no significant impacts, then either such additional evidence as may be necessary to support this conclusion must be included in the documentation and furnished to the commenting agency or the fully coordinated Section 102(2)(C) action process must be initiated.

04. APPROVAL.

- a. Approval Authority. The decision to apply this action choice may be made by the regional director. After the required consultation with DOI and EPA, the regional director may approve the Federal Finding after review by the regional counsel for legal sufficiency. If either DOI or EPA indicates significant environmental impacts or objects to the proposed action on environmental grounds, the preparation and processing of a draft environmental impact statement pursuant to NEPA Section 102(2)(C) is required. See paragraphs 20a(2) and 20c.
- b. Federal Finding. A Finding for a Section 16(c)(4) coordinated action would approximate the following:

"After careful and thorough consideration of the facts developed herein, and after consultation with EPA and DOI pursuant to Section 16(c)(4) of the Airport and Airway Development Act of 1970 regarding the effects of the proposed action, the undersigned finds: that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in Section 101(a) of the National Environmental Policy Act of 1969 (NEPA); that it will not significantly affect the quality of the human environment or otherwise include any condition requiring full consultation pursuant to Section 102(2)(C) of NEPA; that there is no feasible and prudent alternative to the proposed action; and that the proposed action includes all possible steps to minimize any adverse effects."

When appropriate for Section 4(f) of the DOT Act, the Finding shall also include the following:

"It is also determined that there is no feasible and prudent alternative to use of lands covered by Section 4(f) of the Department of Transportation Act of 1966, as amended; and further, that the proposed action includes all possible planning to minimize harm to such lands."

In all instances, continue with the following:

"Having met all relevant requirements for environmental consideration and consultation, the proposed action is authorized to be taken at such time as other requirements have been met."

85. FINAL DISTRIBUTION. After a Section 16(c)(4) coordinated action is approved, the region shall send one copy of the approval package to EPA, DOI (in Washington), and AAP-400 for record purposes. (If no changes have been made in the negative declaration, no additional copy of that report need be included in the final package sent to AAP-400.)
86. IMPLEMENTATION OF ENVIRONMENTAL COMMITMENTS. Any representations made in the negative declaration with respect to minimization of adverse environmental effects shall receive the same follow-on action and review as for NEPA actions as described in paragraph 66.
87. - 89. RESERVED.

CHAPTER 10. CONTENT, PROCESSING, AND APPROVAL OF
OTHER NEGATIVE DECLARATION ACTIONS

90. CONTENT OF AN ASSESSMENT REPORT.

- a. For actions which do not require coordination pursuant to NEPA Section 102(2)(C) or the Airport Act Section 16(c)(4), an environmental assessment report may be prepared by the public sponsor and addressed to the appropriate FAA official.
- b. The report must include:
 - (1) A description of the proposed action and its purpose.
 - (2) A discussion of the proposed method of accomplishment, including construction techniques and safeguards to be utilized to minimize possible adverse effects upon the environment.
 - (3) A discussion, based on consideration of possible impacts as described in paragraph 44, supporting the assessment that the airport development project will not significantly alter the airport's impact upon its surrounding environment.
 - (4) A discussion indicating consistency with community planning.
 - (5) Alternatives considered and why rejected.
- c. The responsible official must review the evidence and determine that an environmental impact statement and coordination pursuant to paragraph 20 are not required.

91. COORDINATION. There is no formal Federal review prescribed for the negative declaration. However, appropriate Federal, state, or local coordination must be completed as described under paragraph 44 for any applicable areas of environmental consideration (e.g., historical and archaeological site considerations, DOT 4(f) lands, wetlands and coastal zones, endangered species). In all cases, coordination with the State Historic Preservation Officer is required. In addition, nothing in this order shall be construed as preventing such informal coordination as may be considered prudent by the region to satisfy itself regarding the extent of specific impacts. The negative declaration shall be reviewed by any affected FAA program division and staff official at the regional level before finalization.

92. NOTIFICATION. Formal announcement of availability of negative declarations is not required. However, such reports, including the A-95 coordination comments, shall be made available on request free of charge or at a fee commensurate with the cost of reproduction through FAA region and/or district offices and the sponsor's office.

93. DOCUMENTATION. Documentation to support approval of an action described herein shall include the negative declaration and the Federal Finding plus supporting evidence for all applicable environmental considerations and required assurances. Reference paragraph 63a(3). It should be noted that the requirements for consultation and documentation as described under paragraph 44 for applicable environmental considerations also pertain to these actions.
94. APPROVAL.
- a. Approval Authority. The decision to apply this action choice may be made by the regional director. If the project involves a determination under Section 4(f) of the DOT Act, approval is subject to review for legal sufficiency by regional counsel.
- b. Federal Finding. The Finding for this action should approximate the following:

"After careful and thorough consideration of the facts contained herein, the undersigned finds: that the proposed Federal action is consistent with existing national environmental policies and objectives as set forth in Section 101(a) of the National Environmental Policy Act of 1969 (NEPA); that it will not significantly affect the quality of the human environment or otherwise include any condition requiring consultation pursuant to Section 102(2)(C) of NEPA or Section 16(c)(4) of the Airport and Airway Development Act of 1970."

When appropriate for Section 4(f) of the DOT Act, the Finding shall also include the following:

"It is also determined that there is no feasible and prudent alternative to use of lands covered by Section 4(f) of the Department of Transportation Act of 1966, as amended; and further, that the proposed action includes all possible planning to minimize harm to such lands."

In all instances, continue with the following:

"Having met all relevant requirements for environmental consideration and consultation, the proposed action is authorized to be taken at such time as other requirements have been met."

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95. FINAL DISTRIBUTION. Distribution of the above documentation outside the region is not required by this order. However, such documentation shall be made readily available upon request.
96. IMPLEMENTATION OF ENVIRONMENTAL COMMITMENTS. Any representations made in the assessment report with respect to minimization of adverse environmental effects shall receive the same follow-on action and review as described in paragraph 66.
97. - 99. RESERVED.

CHAPTER 11. PRIOR FINDING AFFIRMATIONS

100. GENERAL. When a proposed action falls within the scope of a previously approved environmental impact statement or negative declaration, a prior finding affirmation may be in order. The following circumstances should be reviewed when deciding upon the applicability of an affirmation.
- a. If the action is to be taken within two years of the original environmental approval and if there is no substantive change in either the description of the action or the environmental impacts attributable to the action, no further assessment or prior finding affirmation is required.
 - b. If the action is to be taken in a two- to five-year period after the original environmental approval, an affirmation of the prior finding may be made if a thorough analysis reveals that the action conforms with the prior approved plan or projects and that the data and analysis in the prior environmental assessment, as they apply to the proposed action, are still substantially valid.
 - c. If the action is to be taken more than five years after the original decision, normally a new assessment in the form of an environmental impact statement or negative declaration will be necessary depending on the scope and thoroughness of the initial assessment and current applicability. In special cases, it is possible that the applicability of a prior finding may be documented and a prior finding affirmation may be made.
101. COORDINATION. No Federal coordination of the prior finding affirmation is required except for such intradepartmental coordination as needed to obtain approval as described in paragraph 104. However, nothing in this order shall be construed as preventing such informal coordination as may be considered prudent or necessary by the region to establish the current validity of the data and analyses as contained in the prior assessment.
102. NOTIFICATION. Formal announcement of availability of prior finding affirmations or supporting documentation is not required. However, such documentation shall be made available on request free of charge or at a fee commensurate with the cost of reproduction through FAA region and/or district offices and the sponsor's office.
103. DOCUMENTATION. The prior finding affirmation package shall contain the following documentation:
- a. A report for approval by the responsible official which includes:
 - (1) A description of the proposed action and its relationship to the description of work in the prior approved assessment.

(2) An affirmation statement as set forth in paragraph 104b.

- b. A copy of the prior approved environmental impact statement or negative declaration and the prior decision memorandum and Federal Finding shall be made available to the responsible official.

104. APPROVAL.

- a. Approval Authority. The authority to approve a prior finding affirmation is at a level commensurate with the description and extent of environmental impacts of the proposed action, with appropriate concurrences and review for legal sufficiency as indicated in paragraphs 64, 84, or 94, whichever is applicable.
- b. Prior Finding Affirmation. The affirmation statement for this action should approximate the following:

"After careful and thorough consideration of the facts contained in the environmental impact statement (or negative declaration) approved (date), the undersigned finds that the proposed Federal action is consistent with the assessment contained therein and that the prior Federal Finding as pertains to the proposed action is hereby affirmed."

When Section 16(c)(4) of the Airport Act (and/or Section 4(f) of the DOT Act) applies to the proposed action, add the following:

"It is hereby affirmed that there is no feasible and prudent alternative to the proposed action (and/or to use of lands covered by Section 4(f) of the Department of Transportation Act of 1966, as amended); and further, the proposed action includes all possible steps to minimize any adverse effects (and/or all possible planning to minimize harm to such lands)."

In all instances, continue with the following:

"Having previously met all relevant requirements for environmental consideration and consultation, the proposed action is authorized to be taken at such time as other requirements have been met."

- 105. FINAL DISTRIBUTION. Distribution of the above documentation is not required outside the FAA by this order. However, such documentation shall be made readily available upon request.

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5050.2B
Appendix 1

APPENDIX 1. SUMMARY TO ACCOMPANY DRAFT AND FINAL STATEMENTS

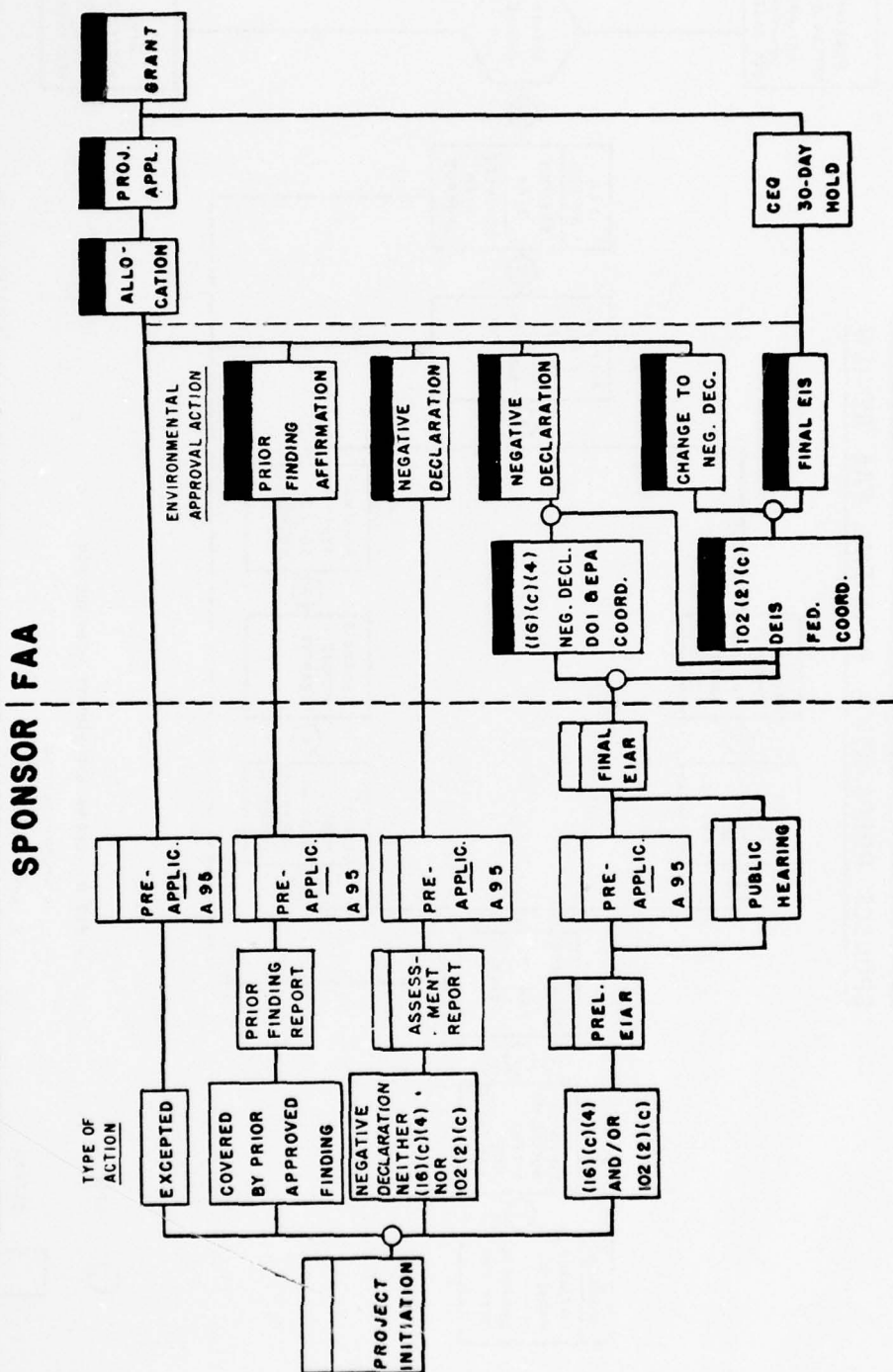
(Check one) ☐ Draft ☐ Final Environmental Statement

Name of responsible Federal agency (with name of operating division where appropriate). Region of origin and name, address, and telephone number of individuals at the agency who can be contacted for additional information about the proposed action or the statement.

1. Name of action (check one) ☐ Administrative Action
☐ Legislative Action.
2. Brief description of action and its purpose. Indicate what states (and counties) particularly affected, and what other proposed Federal actions in the area, if any, are discussed in the statement.
3. Summary of environmental impacts and adverse environmental effects.
4. Summary of major alternatives considered.
5. For draft statements, list all Federal, state, and local agencies and other parties from which comments have been requested. For final statements, list all Federal, state, and local agencies and other parties from which written comments have been received.
6. Date draft statement (and final environmental statement, if one has been issued) made available to CEQ and the public.
7. Date of public hearing, if one was held.

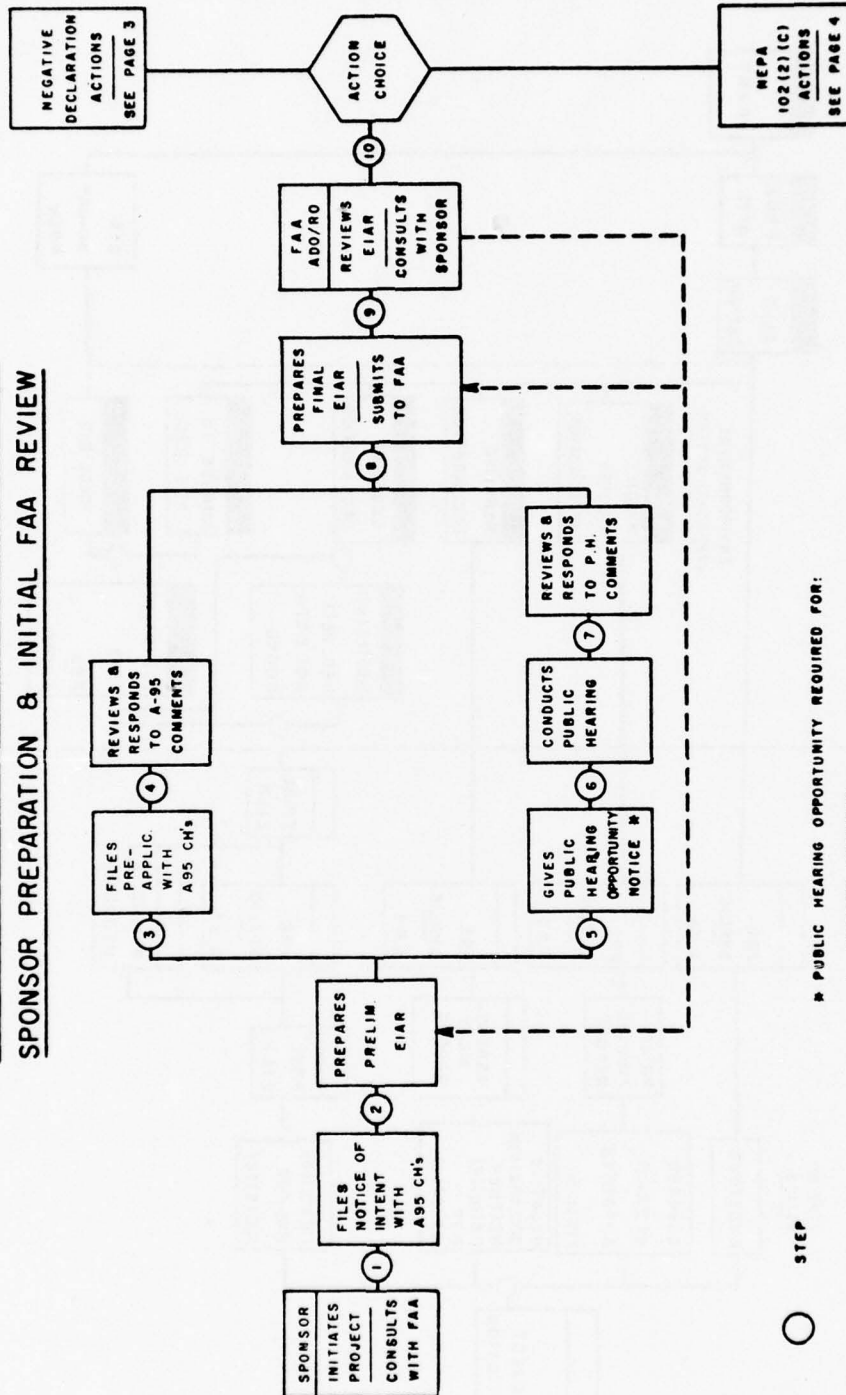
APPENDIX 2. ENVIRONMENTAL PROCESS FLOWCHARTS

OVERVIEW OF ENVIRONMENTAL REVIEW PROCESS

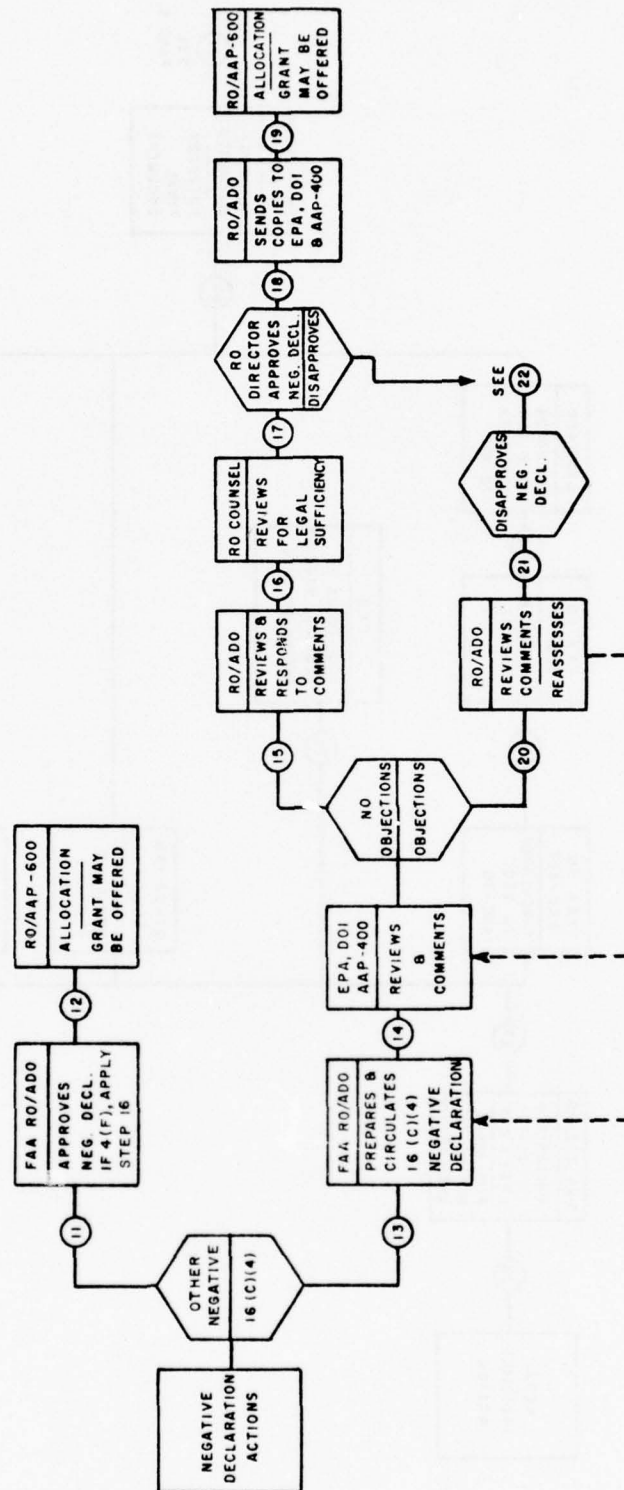


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ENVIRONMENTAL REVIEW PROCESS **SPONSOR PREPARATION & INITIAL FAA REVIEW**

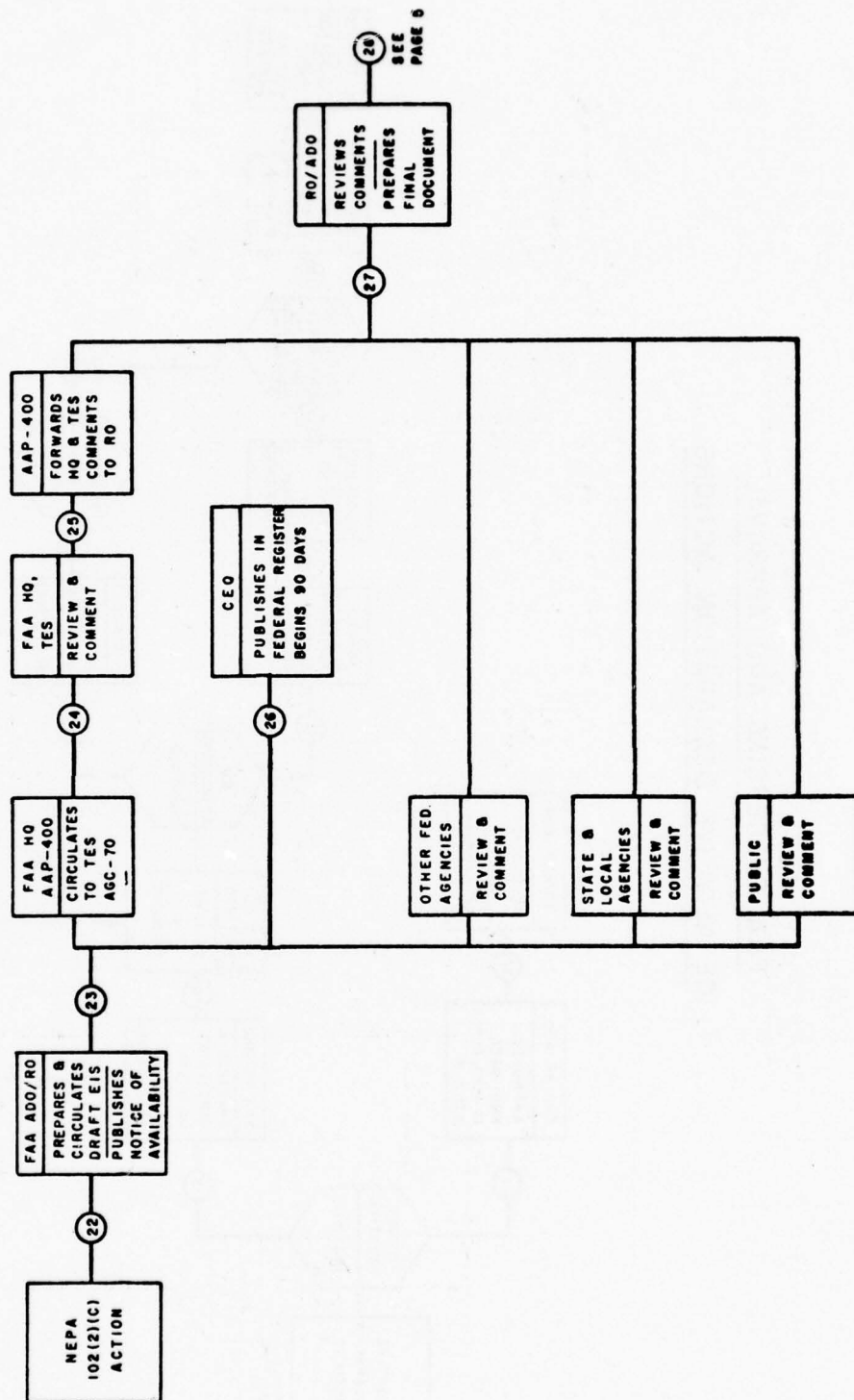


FAA PROCESSING AND APPROVAL OF NEGATIVE DECLARATION ACTIONS



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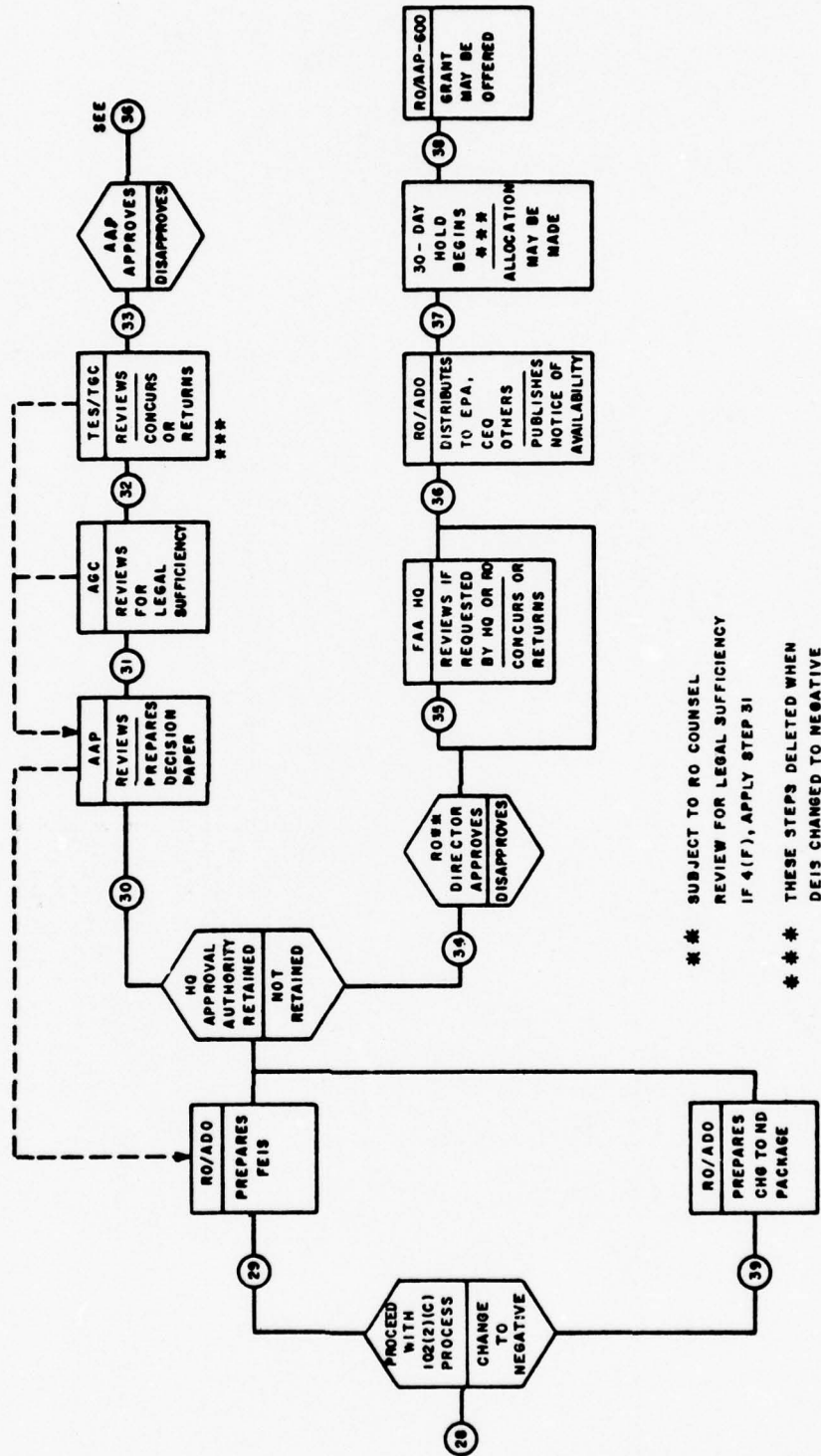
**FAA PROCESSING OF NEPA 102(2)(C)
DRAFT ENVIRONMENTAL IMPACT STATEMENT**



10/21/76

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Appendix 2

FAA FINAL NEPA 102(2)(C) APPROVAL ACTIONS



*** SUBJECT TO RO COUNSEL
REVIEW FOR LEGAL SUFFICIENCY
IF 4(F), APPLY STEP 31

*** THESE STEPS DELETED WHEN
DEIS CHANGED TO NEGATIVE

APPENDIX B

ARGONNE NATIONAL LABORATORY
9700 South Cass Avenue
Argonne, Illinois 60439

DRAFT

PRECONSTRUCTION REVIEW OF AIRPORT PROJECTS
TECHNICAL MEMORANDUM - 2
APPENDIX A
DETAILED REVIEW OF THE REQUIREMENTS AND
IMPLEMENTATION OF STATE INDIRECT
SOURCE REVIEW REGULATIONS

by

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Energy and Environmental Systems Division

EPA Project Officer: Jane Mitchell
Office of Transportation and Land Use Policy

August, 1976

The following tables present the detailed results of a review of state indirect source review (ISR) regulations performed as part of a contract with the U.S. EPA regarding pre-construction review of airport projects. The first three tables describe the various criteria used by the states and local areas to determine which projects are subject to review under the regulation. The data are given for each state and local area, organized by U.S. EPA region number. The Federal regulation, which is not now being implemented, is included for comparison in all the tables. The next two tables (A-4 and A-5) present a tabulation of the data required of an applicant, as described in the state regulation, in applying for a permit for airport or highway projects. Additional information is often required on the application forms supplied by the administering agency; the data from these forms are not included in the two tables.

Table A-6 lists the conditions specified in the state regulations that require disapproval of a permit. That is, if the conditions listed in the table are met, the permit cannot be approved by the administering agency. The seventh table concerns the states that are actively implementing their ISR regulation. Data regarding the number and type of projects reviewed, as well as the personpower required to accomplish the reviews, are presented. Not all the states having regulation are actively implementing them, so Table A-7 covers only 10 states and one local area. The information was gathered by telephone and letter survey of the administering agency in each of the states with an active implementation process. The last table provides, for each state, the name and address of the agency designated in the state regulation to administer the regulation. Except for Table A-7, all data are based on the latest version of each state's regulation.

Table A-1. Indirect Source Review Regulations
in the U.S. - Airport Criteria

| Jurisdiction | Operations/yr | | Passengers/yr | | Other Criteria |
|-------------------|---------------|--------------|---------------|--------------|----------------------------|
| | New | Modified | New | Modified | |
| Federal | 50,000 | 50,000 | 1,600,000 | 1,600,000 | |
| <u>Region I</u> | | | | | |
| Connecticut | | | | | Emissions |
| New Hampshire | | | | | Parking space |
| Maine | | | | | Land area developed |
| <u>Region II</u> | | | | | |
| New York | 50,000 | 50,000 | 1,600,000 | 1,600,000 | |
| <u>Region III</u> | | | | | |
| Virginia | 50,000 | 50,000 | 1,600,000 | 1,600,000 | |
| West Virginia | 50,000 | 50,000 | 1,600,000 | 1,600,000 | |
| <u>Region IV</u> | | | | | |
| Alabama | 50,000 | 50,000 | | | |
| Florida | All | 10% increase | All | 10% increase | |
| Kentucky | 50,000 | 50,000 | 1,600,000 | 1,600,000 | |
| North Carolina | 100,000 | 100,000 | | | 45 peak hour operations |
| <u>Region V</u> | | | | | |
| Minnesota | | | 1,000,000 | 1,000,000 | |
| Wisconsin | 50,000 | 50,000 | 1,000,000 | 1,000,000 | |
| <u>Region VII</u> | | | | | |
| Nebraska | | | | | Parking space |
| <u>Region IX</u> | | | | | |
| Nevada | 50,000 | 50,000 | 1,000,000 | 1,000,000 | |
| <u>Region X</u> | | | | | |
| Idaho | 50,000 | 50,000 | 1,600,000 | 1,600,000 | |
| Oregon | 50,000 | 25,000 | | | |
| Puget Sound | 50,000 | 50,000 | 1,600,000 | 1,600,000 | |

Table A-2. Indirect Source Review Regulations
in the U.S. - Highway Criteria

| Jurisdiction | New | Modified | | Other Criteria |
|------------------------|---|-----------------------------|----------------------------------|--|
| | Total Capacity ^a (AADT) ^b | Total Capacity (AADT) | Additional Capacity (AADT) | |
| <u>Federal</u> | | | | |
| SMSA | 20,000 | | 10,000 | |
| <u>Region I</u> | | | | |
| Connecticut | | | | Emissions |
| New Hampshire | 20,000 | | 10,000 | |
| Maine | | | | Four or more lanes |
| <u>Region II</u> | | | | |
| New York Urban area | 20,000 | | 10,000 | |
| <u>Region III</u> | | | | |
| Virginia | | | | |
| SMSA | 20,000 | | 10,000 | |
| non-SMSA | All | | All | |
| West Virginia | 20,000 | | 10,000 | |
| <u>Region IV</u> | | | | |
| Alabama | 10,000 | | 10,000 | |
| Florida | | | | |
| Selected Counties | 7,500 | 7,500 | 7,500 | |
| Other | 10,000 | 10,000 | 10,000 | |
| Kentucky | | | | |
| SMSA | 10,000 | 10,000 | 10,000 | If AADT presently > 20,000 then 25% capacity increase |
| North Carolina | 10,000 | 10,000 | 10,000 | |
| <u>Region V</u> | | | | |
| Minnesota | | | | |
| SMSA | 20,000 | 20,000 | 10,000 | |
| Wisconsin | | | | |
| SMSA | 8,000 | | 8,000 | |
| non-SMSA | 9,000 | | 9,000 | |
| <u>Region VII</u> | | | | |
| Nebraska | 20,000 | | 10,000 | |

Table A-2. Indirect Source Review Regulations
in the U.S. - Highway Criteria (Cont)

| Jurisdiction | New | Modified | | Other Criteria |
|--------------------|---|-----------------------------|----------------------------------|-------------------|
| | Total Capacity ^a (AADT) ^b | Total Capacity (AADT) | Additional Capacity (AADT) | |
| <u>Region IX</u> | | | | |
| Nevada | 20,000 | | 10,000 | |
| <u>Region X</u> | | | | |
| Idaho | 20,000 | | 10,000 | |
| Oregon | | | | |
| Municipal counties | 20,000 | 20,000 | 10,000 | |
| Other areas | 50,000 | 50,000 | 25,000 | |
| Puget Sound | 20,000 | | 10,000 | |

^a Peak hour volume corrected to 24 hour volume using Highway Capacity Manual.

^b Average Annual Daily Traffic

Table A-3. Indirect Source Review Regulations
in the U.S. - Parking Facility Criteria

| Jurisdiction. | New | | Modified | | | Other Criteria |
|--------------------|--------------------------------------|--------------------|-------------------|-------------------|--------------------|--|
| | Total Capacity (parking space) | Traffic Induced | Total Capacity | Added Capacity | Traffic Induced | |
| | | 1-hr max. | 8-hr max. | | 1-hr max. | |
| <u>Federal</u> | | | | | | |
| SMSA | 1000 | | | 500 | | |
| non-SMSA | 2000 | | | 1000 | | |
| <u>Region I</u> | | | | | | |
| Connecticut | | | | | | Emissions |
| New Hampshire | 750 | | | 500 | | |
| Maine | | | | | | Land area developed |
| <u>Region II</u> | | | | | | |
| New York | | | | | | |
| Urban Area | 1000 | | 500 | 500 | | |
| Outside Urban Area | 2000 | | 1000 | 1000 | | |
| New York County | All | | All | All | | |
| <u>Region III</u> | | | | | | |
| Virginia | | | | | | |
| SMSA | | 700 | 1750 | | 700 | 1750 |
| non-SMSA | | 1400 | 3500 | | 1400 | 3500 |
| West Virginia | | | | | | |
| SMSA | 1000 | | | 500 | | |
| non-SMSA | 2000 | | | 1000 | | |
| <u>Region IV</u> | | | | | | |
| Alabama | | | | | | |
| SMSA | 1000 | | | 500 | | |
| non-SMSA | 2000 | | | 1000 | | |
| Florida | | | | | | |
| single-level | 1500 | | 1500 | 1500 | | |
| multi-level | 750 | | 750 | 750 | | |
| Kentucky | | | | | | |
| single-level | 1500 | | 1500 | 1500 | | |
| multi-level | 750 | | 750 | 750 | | |
| | | | | | | If size > minimum spec- ified, then any increase of 25%. |

Table A-3. Indirect Source Review Regulations in the
U.S. - Parking Facility Criteria (Cont)

| Jurisdiction | New | | Modified | | | Other Criteria |
|--------------------------------------|--------------------------------------|--------------------|-------------------|-------------------|--------------------|-------------------|
| | Total Capacity (parking space) | Traffic Induced | Total Capacity | Added Capacity | Traffic Induced | |
| | | 1-hr max. | 8-hr max. | | 1-hr max. | |
| North Carolina | | | | | | |
| single-level | 1500 | | 1500 | 1500 | | |
| multi-level | 750 | | 750 | 750 | | |
| <u>Region V</u> | | | | | | |
| Minnesota | 2000 | | 2000 | 1000 | | |
| Wisconsin | | | | | | |
| SMSA | 1000 | | | 500 | | |
| non-SMSA | 1500 | | | 750 | | |
| <u>Region VII</u> | | | | | | |
| Nebraska | | | | | | |
| SMSA | 1000 | 1000 | 5000 | 500 | 1000 | 5000 |
| non-SMSA | 2000 | 2000 | 10000 | 1000 | 2000 | 10000 |
| <u>Region IX</u> | | | | | | |
| Nevada | 1000 | | | 500 | | |
| <u>Region X</u> | | | | | | |
| Idaho | | | | | | |
| SMSA | 1000 | | | 500 | | |
| non-SMSA | 2000 | | | 1000 | | |
| Oregon | | | | | | |
| Municipal | 50 | | | 50 | | |
| Large counties | 500 | | | 500 | | |
| Other | 1000 | | | 1000 | | |
| Puget Sound | | | | | | |
| (King, Pierce, and Snohomish Co.) | 250 | | | 250 | | |
| Kitsap Co. | 1000 | | | 1000 | | |

Table A-4. Airport Data Required by State Indirect
Source Review Regulations

| Jurisdiction | Operations per day | | Expected Development- Descrip- tion | Traffic Volume | | Mass Transit | Passenger Loadings | General Description |
|-------------------|--------------------|-----|---|----------------------------|-----------------------|--------------|--------------------|---------------------|
| | Avg | Max | | ADT ^a 1,8 hr | Max 1,8 hr (mi) | | | |
| Federal | X ^b | X | X | X | .25 | X | X | X |
| <u>Region I</u> | | | | | | | | |
| Connecticut | | | | | | | | X |
| New Hampshire | | | X | | | | | X |
| Maine | | | | | | | | X |
| <u>Region II</u> | | | | | | | | |
| New York | | | | | | | | X |
| <u>Region III</u> | | | | | | | | |
| Virginia | | | | | | | | c. |
| West Virginia | | X | | | | | X | X |
| <u>Region IV</u> | | | | | | | | |
| Alabama | | | | | | | | X |
| Florida | | | | | | | | X |
| Kentucky | | | X | X | X | | | X |
| North Carolina | | | | | | | | c. |
| <u>Region V</u> | | | | | | | | |
| Minnesota | X | X | X | X | X | .25 | X | X |
| Wisconsin | | X | | | | | X | X |

Table A-4. Airport Data Required by State Indirect
Source Review Regulations (Cont)

| Jurisdiction | Operations per day | | Expected Development | | Traffic Volume | | | Passenger Loadings | | General Description | |
|-------------------|-----------------------|-----|-------------------------|------|----------------|--------|------|-----------------------|---|------------------------|----|
| | | | | | ADTa | Max | Dist | | | | |
| | Avg | Max | Descrip- | tion | 1,8 hr | 1,8 hr | (mi) | Transit | | | |
| | | | | | | | | | | | |
| <u>Region VII</u> | | | | | | | | | | | |
| Nebraska | | | | | | | | | | | X |
| <u>Region IX</u> | | | | | | | | | | | |
| Nevada | X | X | X | 3 | X | X | .25 | X | X | X | X |
| <u>Region X</u> | | | | | | | | | | | |
| Idaho | | | | | | | | | | | C. |
| Oregon | X | X | X | 3 | d. | d. | .25 | d. | X | X | X |
| Puget Sound | | | | | | | | | | | C. |

^a Average Daily Traffic

^b An 'X' indicates that data or description is required.

^c Application form supplied by administering agency.

^d General description of the change in traffic patterns.

Table A-5. Highway Data Required by State Indirect
Source Review Regulations

| Jurisdiction | Volume | | | Speeds miles/hr. | Capacity vehicles/day | Right-of-way description | Other |
|----------------|-------------------------|-------------------------|-------------------------|---------------------|--------------------------|-----------------------------|----------------------------|
| | Average 1,8,24 hr. | Maximum 1,8,24 hr. | vehicles/time period | | | | |
| | vehicles/time period | vehicles/time period | | | | | |
| Federal | X | X | X | X | | | |
| Region I | | | | | | | |
| Connecticut | | | | | | | General info. |
| New Hampshire | X | X | X | X | | | |
| Maine | | | | | | | |
| Region II | | | | | | | |
| New York | | | | | | | General info. |
| Region III | | | | | | | |
| Virginia | | | | | | | General info. |
| West Virginia | | | | | | | General info. |
| Region IV | | | | | | | |
| Alabama | | | | | | | General info. |
| Florida | | | | | | | General info. |
| Kentucky | | | | | | | General info. |
| North Carolina | | | | | | | General info. |
| Region V | | | | | | | |
| Minnesota | X | X | X | X | X | X | Peak hour vol- ume, ADT |
| Wisconsin | | | | X | X | X | |

Table A-5. Highway Data Required by State Indirect
Source Review Regulations (Cont)

| Jurisdiction | Volume | | Speeds miles/hr. | Capacity vehicles/day | Right-of-way description | Other |
|-------------------|-------------------------|-------------------------|---------------------|--------------------------|-----------------------------|--------------------------|
| | Average 1,8,24 hr. | Maximum 1,8,24 hr. | | | | |
| | vehicles/time period | vehicles/time period | | | | |
| <u>Region VII</u> | | | | | | General info. |
| Nebraska | | | | | | |
| <u>Region IX</u> | | | | | | |
| Nevada | X | X | X | X | X | |
| <u>Region X</u> | | | | | | General info. |
| Idaho | | | | | | Impact on other modes |
| Oregon | X | X | X | | X | General info. |
| Puget Sound | | | | | | |

Table A-6. Conditions Requiring Disapproval of
a Permit Application under Indirect
Source Review Regulations

| Jurisdiction | Violation of Applicable Ambient Standards | Air Quality Degradation | Violation of Other Applicable Regulations |
|-------------------|--|----------------------------|---|
| Federal | CO | | X |
| <u>Region I</u> | | | |
| Connecticut | Any | X | X |
| New Hampshire | Any | X | |
| Maine | | | X |
| <u>Region II</u> | | | |
| New York | CO, O _x , NO ₂ | | X |
| <u>Region III</u> | | | |
| Virginia | CO | | |
| West Virginia | Any | | |
| <u>Region IV</u> | | | |
| Alabama | Any | | X |
| Florida | Any | | |
| Kentucky | Any | | X |
| North Carolina | Any | | X |
| <u>Region V</u> | | | |
| Minnesota | CO | | X |
| Wisconsin | CO | | X |
| <u>Region VII</u> | | | |
| Nebraska | Any | | |
| <u>Region IX</u> | | | |
| Nevada | Any | | X |
| <u>Region X</u> | | | |
| Idaho | Any | | X |
| Oregon | Any | | |
| Puget Sound | CO | X | |

Table A-7. Implementation of State Indirect Source Review Regulations

| Jurisdiction | Estimated Number of Projects Reviewed ^a | Types of Projects Reviewed | Personpower (Person-years) |
|-------------------|--|--|----------------------------|
| <u>Region I</u> | | | |
| Connecticut | 16 | Highways, shopping malls, race tracks | 4 ^b |
| <u>Region II</u> | | | |
| New York | 10 | Shopping centers, office buildings, highways | 1 |
| <u>Region III</u> | | | |
| Virginia | 16 | Highways, shopping centers | <1 |
| <u>Region IV</u> | | | |
| Florida | 300 | Highways, parking garages | 8 |
| Kentucky | 40 | Not available | 1 |
| North Carolina | 15 | Highways, parking related projects | 1 |
| <u>Region V</u> | | | |
| Wisconsin | 25 | Highways, parking garages | 1 |
| Minnesota | 25 | Highways, parking related projects | 1/4 |
| <u>Region IX</u> | | | |
| Nevada | 12 | Resort hotels, highways | <1 |
| <u>Region X</u> | | | |
| Oregon | 75 | Highways, shopping centers | <1 |
| Puget Sound | 19 | Shopping centers, highways | 2 |

^a Since the regulation was enacted.

^b Number of staff; also have environmental impact statement responsibilities.

Table A-8. Agencies Administering State Indirect
Source Review Regulations

| State | Administering Agency |
|-------------------|--|
| <u>Region I</u> | |
| Connecticut | Air Compliance Section Department of Environmental Protection State Office Building Hartford, Connecticut 06115 |
| New Hampshire | New Hampshire Air Pollution Control Agency 61 S. Spring Street Concord, New Hampshire 03301 |
| Maine | Department of Environmental Protection Augusta, Maine 04330 |
| <u>Region II</u> | |
| New York | New York Department of Environmental Conservation 50 Wolf Road Albany, New York 12205 |
| <u>Region III</u> | |
| Virginia | State Air Pollution Control Board Room 1106 Ninth Street Office Building Richmond, Virginia 23219 |
| West Virginia | West Virginia Air Pollution Control Commission 1558 Washington Street, E. Charleston, West Virginia 25311 |
| <u>Region IV</u> | |
| Alabama | Air Pollution Control Commission State Office Building Montgomery, Alabama 36104 |
| Florida | Department of Pollution Control Tallahassee Bank Building Suite 300, 315 S. Calhoun Street Tallahassee, Florida 32301 |
| Kentucky | Department for Natural Resources and Environmental Protection Division of Air Pollution Control 275 East Main Street Frankfort, Kentucky 40601 |
| North Carolina | Department of Natural and Economic Resources P.O. Box 27048 Raleigh, North Carolina 27611 |

Table A-8. Agencies Administering State Indirect
Source Review Regulations (Cont)

| State | Administering Agency |
|-------------------|--|
| <u>Region V</u> | |
| Minnesota | Minnesota Pollution Control Agency 717 Delaware St., S.E. Minneapolis, Minnesota 55440 |
| Wisconsin | Division of Environmental Protection Department of Natural Resources P.O. Box 450 Madison, Wisconsin 53701 |
| <u>Region VII</u> | |
| Nebraska | Department of Environmental Control Box 94653 State House Station Lincoln, Nebraska 68509 |
| <u>Region IX</u> | |
| Nevada | Commission of Environmental Protection 201 S. Fall Street Carson City, Nevada 89701 |
| <u>Region X</u> | |
| Idaho | Department of Environmental and Community Services Statehouse Boise, Idaho 83720 |
| Oregon | Department of Environmental Quality 1234 S.W. Morrison Street Portland, Oregon 97205 |
| Puget Sound | Puget Sound Air Pollution Control Authority 410 W. Harrison Street P.O. Box 9863 Seattle, Washington 98109 |

STATES WITH COMPREHENSIVE ENVIRONMENTAL IMPACT STATEMENT REQUIREMENTS

CALIFORNIA

Source: California Environmental Quality Act of 1970, Cal. Pub. Res. Code, Section 21000-21174 (Supp. 1972), as amended by Ch. 56, Statutes of 1974, March 4, 1974, as amended by Ch. 276, Statutes of 1974, Section 21100(c), January 7, 1975.

Guidelines: 14 Cal. Admin. Code Ch. 3, Guidelines for Implementation of the California Environmental Quality Act of 1970 (Register 73, No. 50--12--15--73), as amended by order of the Secretary for Resources, March 22, 1974, as amended January 7, 1975, as amended April 1975. Guidelines are prepared by the Resources Agency of California.

State Contact: Norman E. Hill, Special Assistant to the Secretary for Resources, The Resources Agency, 1414 Ninth Street, Sacramento, California 95815 (Phone: 916-445-9134).

CONNECTICUT

Source: Connecticut Environmental Policy Act of 1973, Pub. Act 73-562 (approved June 22, 1973). Conn. Gen. Stat. Ann. Ch. 439, Section 22a-1, et seq. (Cum. Supp. 1974-1975) (effective February 1, 1975).

Guidelines: New guidelines are being prepared by the Department of Environmental Protection. Currently in effect: "Draft Guidelines for the Implementation of Executive Order No. 16," transmitted to the state agencies under Memorandum from the Governor, dated December 13, 1972.

State Contact: Mary Ann Massey, Assistant Director of Planning and Research, Department of Environmental Protection. State Office Building, Hartford, Connecticut 06115 (Phone: 203-566-4256).

HAWAII

Source: Act 246, Sess. Laws of Hawaii (approved June 4, 1974), Hawaii Rev. Stat. Ch. 334 (1974). This Act superseded the previous Governor's Executive Order of August 23, 1971.

Guidelines: Guidelines are being prepared by the Hawaii Environmental Quality Commission.

State Contact: Richard E. Marland, Director, Office of Environmental Quality Control, Office of the Governor, 550 Halekauwila Street, Room 301, Honolulu, Hawaii 96813 (Phone: 808-548-6915).

INDIANA

Source: IC 1971, 13-1-10, added by Pub. L. 98, 1972, Ind. Stat. Ann. Section 35-5301, et seq. (Supp. 1971).

Guidelines: Guidelines are being prepared by the Environmental Management Board and are scheduled to be completed by fall 1975.

State Contact: Ralph Pickard, Technical Secretary, Environmental Management Board, 1300 W. Michigan Street, Indianapolis, Indiana 46206 (Phone: 317-633-4420).

MARYLAND

Source: Maryland Environmental Policy Act of 1973, Ch. 702, Md. Acts of 1973, 41 Ann. Code of Md., Section 447-451, (Cum. Supp. 1973), and Ch. 703, Md. Acts of 1973 Natural Res. Art., Ann. Code of Md., Section 1-301 et seq. (1974 Volume) as amended by Ch. 129 of the Md. Acts of 1975, Section 1-301(c) (effective July 1, 1975).

Guidelines: "Revised Guidelines for Implementation of the Maryland Environmental Policy Act" issued by the Secretary of the Department of Natural Resources, June 15, 1974.

State Contact: Paul McKee, Assistant Secretary, Department of Natural Resources, Tawes State Building, Annapolis, Maryland 21404 (Phone: 301-267-5548).

MASSACHUSETTS

Source: Ch. 781, Acts of 1972, Ann. Laws Mass. Ch. 30, Section 61-62. (Cum. Supp. 1973), as amended by Ch. 257 of the Acts of 1974.

Guidelines: "Regulations to Create a Uniform System for the Preparation of Environmental Impact Reports," dated July 6, 1973, as amended October 15, 1973, as amended January 8, 1975. Guidelines are prepared by the Executive Office of Environmental Affairs.

State Contact: Matthew B. Connelly, Jr., Chief Planner, Executive Office of Environmental Affairs, 18 Tremont Street, Boston, Massachusetts 20488 (Phone: 617-727-2808).

MINNESOTA

Source: Minnesota Environmental Policy Act of 1973, Ch. 412, Laws of 1973, Minn. Stat. Ann. Ch. 116D (Cum. Supp. 1974).

Guidelines: "Rules and Regulations for Environmental Impact Statements", issued by the Minnesota Environmental Quality Council on April 4, 1974. These guidelines are presently being revised with distribution scheduled for July 1975.

State Contact: Jock Robertson, Manager, Environmental Analysis Program, Environmental Quality Council, Capital Square Building, 559 Cedar Street, St. Paul, Minnesota 55101 (Phone: 612-296-2757).

MONTANA

Source: Montana Environmental Policy Act of 1971, Ch. 238, L. 1971, Rev. Code Mont., Section 69-6501, et seq. (Cum. Supp. 1973). Statute was amended in 1975 (Ch. 65, Section 69-6508 and Section 69-6509), but as of April 15, 1975 had not been signed into law.

Guidelines: Montana Environmental Quality Council, "Revised Guidelines for Environmental Impact Statements Required by the Montana Environmental Policy Act of 1971," issued September 19, 1973.

State Contact: Loren L. Bahls, PhD., Ecologist, Montana Environmental Quality Council, Capitol Station, Helena, Montana 59601 (Phone: 406-449-3742).

NORTH CAROLINA

Source: North Carolina Environmental Policy Act of 1971 (1971, c. 1203, s.1), N.C. Gen. Stat. Ch. 113A (Cum. Supp. 1973).

Guidelines: North Carolina Department of Administration, "Guidelines for the Implementation of the Environmental Policy Act of 1971," issued February 18, 1972.

State Contact: D. Keith Whitenight, Environmental Planning Coordinator, Department of Natural and Economic Resources, P.O. Box 27687, Raleigh, North Carolina 27611 (Phone: 919-829-3838).

SOUTH DAKOTA

Source: South Dakota Environmental Policy Act, SL 1974, Ch. 245 (approved March 2, 1974), S.D. Comp. Laws 1967 Ch. 11-1A (Supp. 1974).

Guidelines: Department of Environmental Protection, 1974 Informal Guidelines.

State Contact: Dr. Allyn O. Lockner, South Dakota Department of Environmental Protection, Office Building No. 2, Room 415, Pierre, South Dakota 57501 (Phone: 605-224-3351).

VIRGINIA

Source: Virginia Environmental Policy Act of 1973, Ch. 384, Laws of 1973 (approved March 15, 1973) and Ch. 774, Laws of 1972, Va. Code Ann. Sections 10-17-.107 through 10-17-.112, and Sections 10-177 through 10-186 (Supp. 1973), as amended by Ch. 354, Laws of 1974 (approved April 4, 1974), Va. Code Ann. Section 2.1-51.9, Section 10.181, Section 10.183, and Section 10.185.

Guidelines: Procedures Manual for Environmental Impact Statements in the Commonwealth of Virginia, issued by the Governor's Council on the Environment (December 1973; revised January 1975).

State Contact: Susan T. Wilburn, Environmental Impact Statement Coordinator, Governor's Office, Council on the Environment, Eighth Street Office Building, Richmond, Virginia 23219 (Phone: 804-770-4500).

WASHINGTON

Source: State Environmental Policy Act of 1971, Rev. Code Wash. Ch. 43.2C (Supp. 1973), as amended by Sub. Senate Bill 3277, Ch. 179, Laws of 1974 (May 5, 1974).

NOTE: For State Highway Project Environmental Impact Report Requirements see Rev. Code Wash. Ch. 47.04 (Supp. 1973).

Guidelines: Guidelines currently in use are "Guidelines for Implementation of the State Environmental Policy Act of 1971." Current guides were prepared by the Department of Ecology. Revised guides are presently being prepared.

State Contact: Peter R. Haskin, Environmental Review and Evaluation, Office of Planning and Program Development, State of Washington, Department of Ecology, Olympia, Washington 98504 (Phone: 206-753-6890).

WISCONSIN

Source: Wisconsin Environmental Policy Act of 1971, Ch. 274, Laws of 1971, adding Wisc. Stat. Ann. Ch. 1, Section 1.11, et seq. (Cum. Supp. 1974-1975).

Guidelines: "Guidelines for the Implementation of the Wisconsin Environmental Policy Act," issued by Governor's Executive Order No. 69 (December 1973).

State Contact: Farnum Alston, Office of the Governor, State Capital, Madison, Wisconsin 53703 (Phone: 608-266-7829).

PUERTO RICO

Source: Puerto Rico Environmental Policy Act, 12 Laws P.R. Ann. Section 1121, et seq. (1970).

Guidelines: "Guidelines for the Preparation, Evaluation, and Use of Environmental Impact Statements", issued by the Environmental Quality Board on December 19, 1972.

Puerto Rico Contact: Carlos M. Jimenez Barber, Executive Director, Environmental Quality Board, 1550 Ponce de Leon Avenue, 4th Floor, Santurce, Puerto Rico 09910 (Phone: 809-725-5140).

STATES WITH COMPREHENSIVE EXECUTIVE OR ADMINISTRATIVE ORDERS

MICHIGAN

Source: Michigan Executive Order 1971-10, as superseded by Michigan Executive Order 1973-9, as superseded by Michigan Executive Order 1974-4 (May 1974).

Guidelines: Interim Guidelines, prepared by the Environmental Review Board and issued June 24, 1974. Revised guidelines are presently in preparation.

State Contact: Terry L. Yonker, Executive Secretary, Environmental Review Board, Department of Management and Budget, Lansing, Michigan 48913 (Phone: 517-373-0933).

NEW JERSEY

Source: New Jersey Executive Order No. 53 (October 15, 1973).

Guidelines: "Guidelines for the Preparation of an Environmental Impact Statement," issued by the Office of the Commissioner, Department of Environmental Protection in 1973 and updated in February 1974.

State Contact: Alfred Guido, Special Assistant to the Commissioner, Office of Environmental Review, Department of Environmental Protection, P.O. Box 1390, Trenton, New Jersey 08625 (Phone: 609-292-2662).

TEXAS

Source: Policy for the Environment, adopted by the Interagency Council on Natural Resources and Environment on March 7, 1972, and published in "Environment for Tomorrow: The Texas Response." A proposed revision of the Policy was issued by the Council on March 6, 1975.

Guidelines: Guidelines and procedures are contained in "Environment for Tomorrow: The Texas Response," prepared by the Office of the Governor, Division of Planning Coordination, January 1, 1973. A proposed revision of the guidelines was issued by the Division of Planning Coordination on March 6, 1975.

State Contact: Leon Wilhite, Office of the Governor, Division of Planning Coordination, Box 12428, Capital Station, Austin, Texas 78711 (Phone: 512-475-6156).

STATES WITH SPECIAL OR LIMITED EIS REQUIREMENTS

ARIZONA

Source: Game and Fish Commission Policy of July 2, 1971.

Guidelines: Memorandum by the Arizona Game and Fish Commission, "Requirements for Environmental Impact Statements," issued June 9, 1971.

State Contact: Robert D. Curtis, Chief, Wildlife Planning and Development Division, Arizona Game and Fish Commission, 2222 W. Greenway Rd., Phoenix, Arizona 85023 (Phone: 602-942-3000).

DELAWARE

Source: a) Delaware Coastal Zone Act, Ch. 175, Vol. 58 Laws of Del. (June 28, 1971), adding 7 Del. Code Ann. Section 7001 et seq. (Supp. 1973) and b) Delaware Wetlands Law of 1973, adding 7 Del. Code Ann. Ch. 66 (Supp. 1973).

Guidelines: a) 7 Del. Code Ann. Ch. 66, Section 6604 (Supp. 1973), and "Permit Application Instructions and Forms and Information Material on Required Procedures for the Coastal Zone Act," prepared and published by the Delaware State Planning Office, and b) Guidelines for the Wetlands Act are being prepared.

State Contacts: For the Coastal Zone Act -- John Sherman, Coastal Zone Administrator, State of Delaware, Executive Department Planning Office, Dover, Delaware 19901 (Phone: 302-678-4271). For the Wetlands Act --

F. Michael Parkowski, Deputy Attorney General, Department of Natural Resources and Environmental Control, Division of Environmental Control, Dover, Delaware 19901 (Phone: 302-678-4636).

GEORGIA

Source: Ga. L. 1972-179 (March 10, 1972), Ga. Code Ann. Ch. 95A-1, Section 241(e) (1) (1973).

Guidelines: Policy and Procedures Manual: State Tollway Authority prepared by Georgia's Tollway Administrator's Office in May 1972 and revised in February 1973.

State Contact: [REDACTED] Tollway Administrator, Department of Transportation, 2 Capitol Square, Atlanta, Georgia 30334 (Phone: 404-656-3915).

NEBRASKA

Source and Guidelines: Nebraska Department of Roads, Department of Roads Action Plan (1973). This is being rewritten to meet new directives of the U.S. Department of Transportation (FHPM 771 and 772).

State Contact: Robert O. Kuzelka, Comprehensive Planning Coordinator, Office of Planning and Programming, Box 94601, State Capital, Lincoln, Nebraska 68509 (Phone: 402-471-2311).

NEVADA

Source: Ch. 311, Laws of 1971, 58 N.R.S. Ch. 704 (1971).

Guidelines: No guidelines have been issued.

State Contact: Roger S. Toundray, Director, Department of Human Resources, 308 N. Curry Street, Carson City, Nevada 89701 (Phone: 702-885-4730).

NEW JERSEY

Source: a) Coastal Area Facility Review Act, P.L. 1973, Ch. 185 (approved June 20, 1973), N.J.S.A. 13:19-1 et seq. (Cum. Supp. 1974-1975), and b) the New Jersey Wetlands Act of 1970, Ch. 272, Laws of 1970, N.J.S.A. 13:9A-1 et seq. (Cum Supp. 1974-1975).

Guidelines: a) "Procedural Rules for the Administration of the Coastal Area Facilities Review Act", Draft prepared by the Department of Environmental Protection dated 1974, and b) "New Jersey Wetlands Order: Basis and Background" issued by the New Jersey Department of Environmental Protection (April 1972). New guidelines for this Act are presently in the late draft stage.

State Contact: Harold Barker, Chief, Bureau of Marine Lands Management, Marine Services Division, Department of Environmental Protection, P.O. Box 1889, Trenton, New Jersey 08625 (Phone: 609-292-8262).

CITY NEPA'S

BOWIE, MARYLAND

Source and Guidelines: The Bowie, Maryland Environmental Policy and Impact Statement Ordinance, passed by the City Council of Bowie, Maryland on May 3, 1971, and Ordinance 0-2-73 of the City Council of Bowie, Maryland, Declaring an Environmental Policy and Providing for Environmental Impact Statements, passed July 16, 1973.

Contact: Judith Meany, Environmental Planner, City Hall, Bowie, Maryland 20715 (Phone: 301-262-6200).

NEW YORK CITY, NEW YORK

Source: Executive Order No. 87, October 18, 1973.

Guidelines: A "City Environmental Policy Executive Order Environmental Information Form" is utilized for environmental analysis. The Information Form was prepared by the City of New York Environmental Protection Administration in 1973. A revision to this is presently being prepared.

Contact: John Barovich, Office of Environmental Impact, New York Environmental Protection Administration of the City of New York, Room 2344, Municipal Building, New York, New York 10007 (Phone: 212-566-4107).

Source: Council on Environmental Quality, 102 Monitor, Vol. 5, No. 5, June, 1975.

Additional Reference: "The Seventh Annual Report of the Council on Environmental Quality", CEQ, September, 1976; pp 135-137.

BEST AVAILABLE COPY

Municipal Noise Ordinances: 1975

Clifford R. Bragdon, Contributing Editor

The enactment of city noise ordinances continues to grow in the United States. Compiled below is the current list of 539 municipalities with noise regulations, up 23% over the 1974 figure of 440. These ordinances now affect a combined population of over 66 million people.

There is a continuing interest in enacting legislation with quantitative noise emission limits which replace non-quantitative or general nuisance provisions.

The ordinances are organized by category: Nuisance, Zoning (land use), Vehicles, Recreation Vehicles, Railroads, Aircraft,

Construction, and Building. New categories this year are Recreational Vehicles, Railroads, and Construction. Regulations containing acoustical criteria are referred to as performance type regulations, while those without noise emission limits are non-quantitative and difficult to enforce. Land use regulation through the zoning process is still the largest single category of noise control, with a 41% increase over 1974. All categories have grown significantly in the number of acoustical criteria enactments.

This listing is provided as an annual information service for SJV readers. SJV intends to continue updating this service and encourages readers to assist in making this compilation as current and complete as possible. Address your correspondence to: Clifford R. Bragdon, Department of City Planning, Georgia Institute of Technology, Atlanta, GA 30332.

| | | Nuisance | Zoning | Vehicle | Recreational Vehicle | Railroad | Aircraft | Construction | Building |
|---|--|----------|--------|---------|----------------------|----------|----------|--------------|----------|
| ■ Regulation includes acoustical criteria | | 113 | 188 | 117 | 43 | 12 | 26 | 42 | 22 |
| □ Regulation does not include acoustical criteria | | 359 | 18 | 93 | 17 | 6 | 5 | 55 | 8 |
| — No regulation | | 67 | 333 | 329 | 479 | 521 | 508 | 442 | 509 |

| Jurisdiction | 1970 Population | Nuisance | Zoning | Vehicle | Rec/Vehicle | Railroad | Aircraft | Construction | Building |
|----------------------|-----------------|----------|--------|---------|-------------|----------|----------|--------------|----------|
| ALABAMA | | | | | | | | | |
| Anniston | 31,533 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Birmingham | 300,910 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Irondale | 3,166 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Madison | 3,086 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Mobile | 190,026 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Montgomery | 133,386 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| ALASKA | | | | | | | | | |
| Anchorage | 48,081 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Juneau | 6,050 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| ARIZONA | | | | | | | | | |
| Flagstaff | 26,177 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Phoenix | 581,562 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Tempe | 62,907 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Tucson | 262,933 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| ARKANSAS | | | | | | | | | |
| Little Rock | 132,125 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Pine Bluff | 57,389 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| CALIFORNIA | | | | | | | | | |
| Alhambra | 62,125 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Anaheim | 166,704 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Arcadia | 43,867 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Berkeley | 166,716 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Beverly Hills | 33,416 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Buena Park | 63,546 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Burbank | 88,371 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Chico | 19,580 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Costa Mesa | 72,660 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Cotati | 2,081 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Cupertino | 18,216 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Downey | 88,442 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| El Cajon | 52,273 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| El Segundo | 15,620 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Escalon | 1,834 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Fountain Valley | 31,826 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Fresno | 165,972 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Fremont | 100,869 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Gardena | 41,021 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Garden Grove | 121,371 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Glendale | 132,752 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Glendora | 31,349 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Hayward | 93,058 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Hemet | 12,252 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Hermosa Beach | 17,412 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Inglewood | 89,985 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Larkspur | 10,487 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Lakewood | 82,973 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Lodi | 28,691 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Lomita | 19,794 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Long Beach | 358,833 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Los Altos Hills | 6,833 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Los Angeles | 2,816,031 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Los Banos | 9,188 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Lynwood | 43,353 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Manteca | 13,845 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Menlo Park | 26,826 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Monterey | 26,302 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Newark | 27,153 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Newport Beach | 49,422 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Novato | 31,006 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Oakland | 361,561 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Orange | 77,365 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Pacific | 36,020 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Palo Alto | 55,966 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Pasadena | 112,951 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Pleasant Hill | 24,610 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Redding | 16,659 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Red Bluff | 7,676 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Richmond | 79,043 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| ROSS | | | | | | | | | |
| Ross | 2,742 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Sacramento | 254,413 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Salinas | 58,893 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Anselmo | 13,031 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Bernardino | 104,251 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Clemente | 17,063 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Diego | 696,769 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Francisco | 715,674 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Marcos | 3,896 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Jose | 445,779 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Leandro | 68,698 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Mateo | 78,991 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| San Rafael | 38,977 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Santa Barbara | 70,215 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Santa Clara | 87,717 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Santa Fe Springs | 14,750 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Santa Maria | 32,749 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Santa Monica | 88,289 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Santa Rosa | 50,006 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Sausalito | 6,158 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Simi Valley | 59,832 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| South El Monte | 13,442 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| South Gate | 56,909 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Sunnyvale | 95,408 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Tracy | 14,724 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Torrance | 134,584 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Victorville | 10,845 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| COLORADO | | | | | | | | | |
| Arvada | 49,083 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Aspen | 2,404 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Aurora | 74,974 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Boulder | 66,870 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Colorado Springs | 135,060 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Denver | 514,678 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Dillon | 182 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Englewood | 33,695 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Fort Collins | 43,337 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Lakewood | 32,787 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Littleton | 26,466 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Wheat Ridge | 29,795 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| CONNECTICUT | | | | | | | | | |
| Berlin | 14,149 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bridgeport | 156,542 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Farmington | 14,390 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Hartford | 158,017 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| New Haven | 137,707 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Stonington | 15,590 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Westport | 27,414 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| DELAWARE | | | | | | | | | |
| Wilmington | 80,386 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| DISTRICT OF COLUMBIA | | | | | | | | | |
| District of Columbia | 756,510 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| FLORIDA | | | | | | | | | |
| Anna Maria | 1,400 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Atlantis | 844 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bal Harbor Village | 2,104 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bay Harbor | 4,723 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Bay Lake | 18 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Boca Raton | 28,506 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Cape Canaveral | 5,131 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Clearwater | 52,074 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Cocoa Beach | 11,555 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Coral Gables | 42,494 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Dania | 9,819 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Daytona Beach | 47,682 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Deerfield Beach | 19,577 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| DeLand | 11,641 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Delray Beach | 19,915 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |

| Jurisdiction | 1970 Population | Nuisance | Zoning | Vehicle | Rec/Vehicle | Railroad | Aircraft | Constructive | Building |
|-------------------------|--------------------|----------|--------|---------|-------------|----------|----------|--------------|----------|
| Springfield | 120,096 | □ | - | □ | - | - | - | - | - |
| Waynesville | 3,376 | □ | - | □ | - | - | - | - | - |
| MONTANA | | | | | | | | | |
| Billings | 61,581 | □ | - | - | - | - | - | - | - |
| Great Falls | 60,091 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Helena | 22,730 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| Missoula | 29,497 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ |
| NEBRASKA | | | | | | | | | |
| Beatrice | 12,787 | □ | - | - | - | - | - | - | - |
| Lincoln | 149,518 | - | - | ■ | - | - | - | - | - |
| McCook | 8,285 | □ | ■ | ■ | - | - | - | - | - |
| Omaha | 346,929 | □ | □ | □ | ■ | - | - | □ | □ |
| Scottsbluff | 14,507 | □ | - | □ | - | - | - | □ | □ |
| Sidney | 6,258 | □ | - | - | - | - | - | - | - |
| NEVADA | | | | | | | | | |
| Las Vegas | 125,787 | □ | ■ | □ | - | - | - | - | - |
| NEW HAMPSHIRE | | | | | | | | | |
| Manchester | 87,754 | □ | - | - | - | - | - | - | - |
| NEW JERSEY | | | | | | | | | |
| Absecon | 6,094 | □ | - | - | - | - | - | - | - |
| Asbury Park | 16,533 | - | - | - | - | - | - | - | - |
| Bayonne | 72,743 | □ | - | - | - | - | - | - | - |
| Belleville | 34,643 | ■ | ■ | ■ | - | - | - | - | - |
| Berkeley Heights | 13,078 | - | - | - | - | - | - | - | ■ |
| Bloomfield | 52,059 | □ | - | - | - | ■ | - | - | - |
| Boonton | 9,261 | ■ | ■ | - | - | - | - | - | - |
| Bordentown | 4,490 | □ | - | - | - | - | - | - | - |
| Brigantine | 6,741 | □ | - | - | - | - | - | - | - |
| Burlington | 11,991 | □ | - | - | - | - | - | - | - |
| Camden | 102,551 | □ | - | - | - | - | - | - | - |
| Cape May | 4,392 | □ | - | - | - | - | - | - | - |
| Clifton | 82,437 | ■ | ■ | - | - | - | - | - | - |
| Clinton | 1,742 | - | - | - | - | - | - | - | - |
| Corbin | 258 | □ | - | - | - | - | - | - | - |
| Dover | 15,039 | □ | - | - | - | - | - | - | - |
| East Orange | 75,471 | □ | - | - | - | - | - | - | - |
| Elizabeth | 112,654 | □ | ■ | - | - | - | - | - | - |
| Ewing | 32,831 | □ | - | - | - | - | - | - | - |
| Fairlawn | 37,975 | ■ | ■ | ■ | - | - | - | - | - |
| Gloucester | 14,707 | ■ | ■ | ■ | - | - | - | - | - |
| Hackensack | 36,008 | □ | - | - | - | - | - | - | - |
| Hammonton | 11,464 | ■ | ■ | ■ | - | - | - | - | - |
| Hanover | 10,700 | □ | - | - | - | - | - | - | - |
| Harrison | 11,811 | □ | - | - | - | - | - | - | - |
| Hasbrouck Heights | 13,651 | □ | - | - | - | - | - | - | - |
| Hawthorne | 9,173 | □ | - | - | - | - | - | - | - |
| Hightstown | 5,431 | □ | - | - | - | - | - | - | - |
| Hoboken | 45,380 | ■ | ■ | ■ | - | - | - | - | - |
| Irvington | 59,743 | ■ | ■ | ■ | - | - | - | - | - |
| Jersey City | 260,545 | □ | - | □ | - | - | - | - | - |
| Lakewood | 17,874 | ■ | ■ | - | - | ■ | - | □ | □ |
| Linden | 41,409 | □ | - | □ | - | - | - | □ | □ |
| Long Branch | 31,774 | □ | - | - | - | - | - | - | - |
| Margate | 10,576 | - | - | - | - | - | - | - | - |
| Maywood | 11,087 | ■ | ■ | - | - | - | - | - | - |
| Morristown | 17,662 | □ | - | - | - | - | - | - | - |
| Newark | 382,417 | □ | - | - | - | - | - | - | - |
| Newton | 7,297 | □ | - | - | - | - | - | - | - |
| North Haledon | 7,614 | □ | - | - | - | - | - | - | - |
| North Wildwood | 3,914 | □ | - | - | - | - | - | - | - |
| Nutley | 31,913 | □ | - | - | - | - | - | - | - |
| Ocean City | 10,575 | □ | - | - | - | - | - | - | - |
| Orange City | 32,566 | □ | - | - | - | - | - | - | - |
| Passaic | 55,124 | □ | - | - | - | - | - | - | - |
| Paterson | 144,824 | □ | - | - | - | - | - | - | - |
| Pemberton Borough | 1,576 | □ | - | - | - | - | - | - | - |
| Perth Amboy | 38,799 | □ | - | - | - | - | - | - | - |
| Plainfield | 46,862 | □ | - | - | - | - | - | - | - |
| Pleasantville | 13,778 | ■ | ■ | ■ | - | - | - | - | - |
| Princeton | 12,311 | ■ | ■ | ■ | - | - | - | - | - |
| Rahway | 29,114 | □ | - | - | - | - | - | - | - |
| Ridgefield Park | 14,453 | □ | - | - | - | - | - | - | - |
| Salem | 7,648 | □ | - | - | - | - | - | - | - |
| Secaucus | 13,228 | □ | - | - | - | - | - | - | - |
| South Amboy | 9,338 | ■ | ■ | ■ | - | - | - | □ | □ |
| Sparta | 10,819 | ■ | ■ | ■ | - | - | - | □ | □ |
| Summit | 23,620 | □ | - | - | - | - | - | - | - |
| Trenton | 104,638 | □ | - | - | - | - | - | - | - |
| Vineland | 47,399 | □ | - | - | - | - | - | - | - |
| Wayne | 49,141 | □ | - | - | - | - | - | - | - |
| Westfield | 33,720 | □ | - | - | - | - | - | - | - |
| West Orange | 43,915 | ■ | ■ | ■ | - | - | - | - | - |
| Wharton | 11,105 | ■ | ■ | ■ | - | - | - | - | - |
| Wildwood | 4,110 | □ | - | - | - | - | - | - | - |
| Woodbridge | 78,846 | ■ | - | - | - | - | - | - | - |
| NEW MEXICO | | | | | | | | | |
| Albuquerque | 243,751 | □ | - | □ | - | - | □ | - | - |
| Gallop | 13,779 | - | - | □ | - | - | - | - | - |
| Los Alamos | 11,310 | □ | ■ | ■ | - | - | - | - | - |
| NEW YORK | | | | | | | | | |
| Albany | 115,781 | - | □ | - | - | - | - | - | - |

| Jurisdiction | 1970 Population | Nuisance | Zoning | Vehicle | Rec/Vehicle | Railroad | Aircraft | Construct | Building |
|--------------------|--------------------|----------|--------|---------|-------------|----------|----------|-----------|----------|
| Binghamton | 64,123 | □ | ■ | □ | | | | | |
| Buffalo | 462,768 | □ | | | | | | | |
| Freeport | 40,374 | □ | | | | | | | |
| Hempstead | 39,411 | | | | | | ■ | | |
| Ithaca | 26,226 | □ | | | | | | | |
| Lake George | 1,506 | □ | □ | | | | | | |
| Lynbrook | 23,776 | □ | | | | | | | |
| Mamaroneck | 18,909 | □ | | ■ | | | | | |
| New Rochelle | 75,385 | □ | | | | | | | |
| New York City | 7,895,563 | □ | ■ | ■ | | | | | ■ |
| Niskayuna | 6,186 | □ | ■ | | | | | | |
| Ossining | 21,659 | □ | | | | | | | |
| Rochester | 296,233 | □ | | | | | | | |
| Utica | 91,611 | □ | | | | | | | |
| White Plains | 50,125 | ■ | | □ | | | | | |
| Yonkers | 204,297 | □ | | | | | | | |
| NORTH CAROLINA | | | | | | | | | |
| Aberdeen | 1,592 | □ | | | | | | | |
| Asheville | 57,581 | | | | | | | | |
| Aurora | 620 | | | | | | | | |
| Belmont | 4,814 | | | | | | | | |
| Benson | 2,267 | | | | | | | | |
| Boone | 8,754 | | | | | | | | |
| Burlington | 35,930 | | | | | | | | |
| Carolina Beach | 1,663 | | | | | | | | |
| Carrboro | 3,472 | | | | | | | | |
| Chapel Hill | 25,537 | ■ | | □ | | | | □ | |
| Concord | 18,464 | | | | | | | | |
| Conetoe | 160 | | | | | | | | |
| Durham | 95,438 | | | | | | | □ | |
| Fayetteville | 53,510 | | | □ | | | | | |
| Forest City | 7,179 | | | | | | | | |
| Franklin | 2,336 | | | | | | | | |
| Fuquay-Varina | 3,576 | | | | | | | | |
| Gastonia | 47,143 | | | | | | | | |
| Gibsonville | 2,019 | | | | | | | | |
| Goldensboro | 26,810 | | | | | | | | |
| Greensboro | 144,076 | | | □ | | | | | |
| Hickory | 20,569 | | | | | | | | |
| High Point | 63,204 | | | | | | | | |
| Kings Mountain | 8,405 | | | | | | | | |
| Kinston | 22,309 | | | | | | | | |
| Kure Beach | 394 | | | | | | | | |
| Laurinburg | 8,859 | | | | | | | | |
| Lumberton | 16,961 | | | | | | | | |
| Madison | 2,081 | | | | | | | | |
| Manteo | 547 | | | | | | | | |
| Marion | 3,335 | | | | | | | | |
| Monroe | 11,282 | | | | | | | | |
| Mt. Pleasant | 1,174 | | | | | | | | |
| New Bern | 14,660 | | | □ | | | | | |
| Newton | 7,857 | | | | | | | | |
| Raleigh | 123,793 | | | □ | | | | | |
| Red Springs | 3,383 | | | | | | | | |
| Roanoke Rapids | 13,508 | | | | | | | | |
| Rocky Mount | 34,284 | | | | | | | | |
| Roper | 649 | | | | | | | | |
| Salisbury | 22,515 | | | | | | | | |
| Seaboard | 611 | | | | | | | | |
| Silver City | 4,689 | | | | | | | | |
| Southern Pines | 5,937 | | | | | | | | |
| Statesville | 19,996 | | | | | | | | |
| Tarboro | 9,425 | | ■ | | | | | | |
| Thomasville | 15,230 | | | | | | | | |
| Valdese | 3,182 | | | | | | | | |
| Wake Forest | 3,148 | | | | | | | | |
| Walnut Cove | 1,213 | | | | | | | | |
| Warsaw | 2,701 | | | | | | | | |
| Washington | 8,961 | | | | | | | | |
| Wilmington | 46,169 | | | | | | | | |
| Winston-Salem | 132,913 | ■ | ■ | ■ | | | | | |
| Winton | 917 | □ | | | | | | | |
| NORTH DAKOTA | | | | | | | | | |
| Bismark | 34,703 | □ | - | - | - | - | - | - | - |
| OHIO | | | | | | | | | |
| Akron | 275,425 | □ | | | | | | | |
| Amherst | 9,902 | | | | □ | | | | |
| Cincinnati | 452,524 | | | ■ | | | | | |
| Cleveland | 750,903 | | ■ | ■ | | | | □ | |
| Columbus | 540,025 | | ■ | ■ | | | | | |
| Dayton | 243,601 | | ■ | ■ | | | | | |
| Middleburg Heights | 12,367 | | ■ | ■ | | | | | |
| Shaker Heights | 36,306 | | | | | | | | |
| Springfield | 81,941 | | | | | | | | |
| Toledo | 383,818 | | ■ | ■ | ■ | | | ■ | |
| University Heights | 17,055 | □ | | | | | | | |
| OKLAHOMA | | | | | | | | | |
| Oklahoma City | 368,856 | □ | ■ | | | | | | |
| Tulsa | 330,350 | □ | | | | | | | |
| OREGON | | | | | | | | | |
| Coos Bay | 13,466 | □ | | □ | | | | □ | |
| Grants Pass | 12,455 | | ■ | | | | | | |
| Medford | 28,454 | □ | | | | | | | |

| Jurisdiction | 1970 Population | Nuisance | Zoning | Vehicle | Rec/Vehicle | Railroad | Aircraft | Construction | Building |
|-----------------------|--------------------|----------|--------|---------|-------------|----------|----------|--------------|----------|
| Portland | 380,620 | ☐ | ■ | ■ | ■ | - | - | ■ | - |
| Silverton | 4,301 | - | ■ | - | - | - | - | - | - |
| PENNSYLVANIA | | | | | | | | | |
| Allentown | 109,527 | ■ | ■ | ■ | - | - | ■ | - | - |
| Bethlehem | 72,686 | ☐ | ■ | - | - | - | - | - | - |
| Erie | 129,231 | ☐ | ■ | - | - | - | - | - | - |
| Girard | 2,631 | - | ■ | - | - | - | - | - | - |
| Philadelphia | 1,950,098 | ☐ | ■ | - | - | - | - | - | - |
| Pittsburgh | 520,117 | ☐ | - | - | - | - | - | - | - |
| Scranton | 103,564 | ☐ | ■ | - | - | - | - | - | - |
| West Mifflin | 28,070 | ☐ | ■ | - | - | - | - | - | - |
| RHODE ISLAND | | | | | | | | | |
| Cranston | 74,287 | - | ■ | - | - | - | - | - | - |
| East Providence | 48,151 | - | ■ | - | - | - | - | - | - |
| Pawtucket | 76,984 | ■ | ■ | - | - | - | - | ■ | ■ |
| Providence | 179,116 | ☐ | ■ | - | - | - | - | - | - |
| Warwick | 83,694 | - | ■ | - | - | - | - | - | - |
| SOUTH CAROLINA | | | | | | | | | |
| Columbia | 113,542 | - | ■ | ■ | - | - | ■ | - | - |
| Florence | 25,997 | - | ■ | - | - | - | - | - | - |
| SOUTH DAKOTA | | | | | | | | | |
| Lemmon | 2,456 | - | - | ■ | - | - | - | - | - |
| Sioux Falls | 72,488 | - | ☐ | ☐ | - | - | - | - | - |
| TENNESSEE | | | | | | | | | |
| Chattanooga | 119,923 | ☐ | - | ☐ | - | - | - | ☐ | - |
| Kingsport | 31,939 | - | - | ☐ | - | ☐ | - | - | - |
| Knoxville | 276,293 | - | - | ■ | ■ | - | - | ☐ | - |
| Memphis | 623,530 | ☐ | - | ☐ | - | - | - | ☐ | - |
| Nashville | 448,003 | - | ■ | ☐ | - | - | - | ☐ | - |
| TEXAS | | | | | | | | | |
| Amarillo | 127,010 | ☐ | ■ | ■ | - | - | - | - | - |
| Austin | 193,862 | ☐ | - | ■ | - | - | - | - | - |
| Beaumont | 117,548 | ☐ | - | - | - | - | - | ☐ | - |
| Corpus Christi | 204,525 | ☐ | - | ☐ | - | - | - | - | - |
| Dallas | 844,401 | ☐ | ■ | - | - | - | - | - | - |
| El Paso | 322,261 | ☐ | - | ☐ | - | - | - | - | - |
| Fort Worth | 393,476 | ☐ | - | ☐ | - | ☐ | - | - | - |
| Garland | 81,437 | ☐ | - | ☐ | - | - | - | - | - |
| Houston | 1,232,802 | ☐ | - | ☐ | - | - | - | - | - |
| Irving | 97,457 | ☐ | - | ☐ | - | - | - | ☐ | - |
| Killeen | 35,507 | ☐ | - | ☐ | - | - | - | - | - |
| Mineral Wells | 18,411 | ☐ | - | ☐ | - | - | - | - | - |
| Odessa | 78,380 | ☐ | ■ | ☐ | - | ☐ | ☐ | - | - |
| Saginaw | 2,382 | ☐ | - | ☐ | - | - | - | ☐ | - |
| San Antonio | 654,153 | ☐ | - | ☐ | - | - | - | - | - |
| Texarkana | 30,497 | ☐ | - | ☐ | - | - | - | ☐ | - |
| Wichita Falls | 96,265 | ☐ | - | ☐ | - | - | - | ☐ | - |
| UTAH | | | | | | | | | |
| Ogden | 69,478 | ■ | ■ | ■ | - | - | - | ■ | - |
| Provo | 53,131 | ■ | ■ | ■ | - | - | - | ■ | ■ |
| Roosevelt | 2,005 | ☐ | - | - | - | - | - | - | - |
| Salt Lake City | 175,885 | ■ | ■ | ■ | ■ | ■ | - | ■ | - |
| VIRGINIA | | | | | | | | | |
| Alexandria | 110,927 | ☐ | - | ☐ | - | - | - | - | - |
| Arlington | 174,284 | ☐ | ■ | ■ | - | - | - | - | - |
| Chesapeake | 89,580 | ☐ | ☐ | ☐ | - | - | - | - | - |
| Hampton | 120,779 | ☐ | ☐ | ☐ | ☐ | - | - | ☐ | - |
| Newport News | 138,177 | ☐ | ■ | ■ | - | - | - | - | - |
| Norfolk | 307,951 | ☐ | - | ☐ | - | - | - | ☐ | - |
| Richmond | 249,621 | ☐ | ☐ | - | - | - | - | - | - |
| Virginia Beach | 172,106 | ☐ | ■ | - | - | - | - | - | - |
| WASHINGTON | | | | | | | | | |
| Bellevue | 61,102 | - | ■ | ■ | - | - | - | - | - |
| College Place | 4,510 | ☐ | - | ☐ | - | - | - | - | - |
| Medina | 3,455 | ■ | - | ■ | - | - | - | ■ | - |
| Pullman | 20,509 | ■ | - | ☐ | - | - | - | ☐ | - |
| Richland | 26,290 | - | ■ | ■ | - | - | - | - | - |
| Seattle | 530,831 | ☐ | ☐ | ■ | - | - | - | - | - |
| Snohomish | 5,174 | ☐ | ☐ | ■ | - | - | ■ | - | - |
| Spokane | 170,516 | ☐ | ■ | ■ | - | - | - | - | - |
| Tacoma | 154,381 | ☐ | ■ | ■ | - | - | - | - | ■ |
| Walla Walla | 23,619 | ☐ | - | ☐ | ☐ | ☐ | - | ☐ | - |
| Yakima | 45,588 | ☐ | - | ☐ | - | - | - | - | - |
| WISCONSIN | | | | | | | | | |
| Madison | 173,258 | ■ | ■ | ☐ | - | - | - | - | - |
| Milwaukee | 717,372 | ■ | ■ | ■ | - | - | - | - | - |
| Racine | 95,162 | ■ | ■ | ■ | - | - | - | - | - |
| Sparta | 6,258 | ☐ | - | ☐ | - | - | - | - | - |
| WYOMING | | | | | | | | | |
| Casper | 39,361 | - | ☐ | - | - | - | - | - | - |
| Cheyenne | 40,914 | ■ | - | ■ | - | - | - | - | - |
| Lander | 7,112 | ☐ | - | ■ | - | - | - | - | - |
| Powell | 4,807 | ☐ | - | ■ | - | - | - | - | - |
| Riverton | 7,995 | - | - | ■ | - | - | - | - | - |
| Worland | 5,055 | ☐ | - | - | - | - | - | - | - |
| Total | 66,294,095 | | | | | | | | |

APPENDIX C

NOISE EXPOSURE FORECAST CALCULATION SUMMARY

Summary of Basic Noise Exposure Forecast Equations

In calculation of NEF values, aircraft noise levels are expressed in terms of the effective perceived noise level (EPNL). In estimating the noise exposure near an airport or flight path resulting from the operation of a number of different aircraft, it is convenient to group the aircraft in classes based upon consideration of the aircraft noise characteristics and takeoff and landing performance. Each class is assigned a description of the noise in terms of a set of EPNL vs distance curves and a set of takeoff and landing profiles. Thus, for a given class of aircraft at a particular power setting (i.e., takeoff power) it is assumed that the aircraft noise characteristics may be described by a single EPNL vs distance curve. Reference 1 provides the basic aircraft noise information used in the NEF computations and reference 2 provides takeoff profile information.

The total noise exposure produced by aircraft operations at a given point is viewed as being composed of the effective perceived noise levels produced by different aircraft classes flying along different flight paths. For aircraft class i on flight path j , the NEF (ij) can be expressed as

$$\text{NEF } (ij) = \text{EPNL } (ij) + 10 \log [N (\text{day}) (ij) + 16.67 N (\text{night}) (ij)] - 88$$

(Equation 1)

where

NEF (ij) = Noise Exposure Forecast value produced by aircraft class (i) along flight path segment (j).

EPNL (ij) = Effective perceived noise level produced at the given point by aircraft class (i) flying along flight path segment (j).

$N (\text{day})$ = Total number of daytime flights (7 AM to 10 PM)

$N (\text{night})$ = Total number of night flights (10 PM to 7 AM)

The total NEF at the given ground position may be determined by summation of all the individual NEF (ij) values on an "energy" basis:

$$NEF = 10 \log \sum_i \sum_j \text{antilog} \frac{NEF(ij)}{10} \quad (\text{Equation 2})$$

An NEF Calculation Example

Table I is a worksheet showing the results of sample calculations for determining the total NEF value at a single ground position exposed to takeoff operations from three aircraft classes, L, M and N. Column (a) shows the effective perceived noise level for the three aircraft classes, *while columns (b) and (c) show the number of movements per day and night periods. Column (d) shows the weighted summation of number of operations per day and night period, calculated in accordance with Equation 1. The last column in the table lists the NEF values, NEF (ij) for each aircraft class. You will note that in this example, aircraft class L produces a lower EPNL value than class M. However, the NEF value due to aircraft class L operations is greater than the NEF value resulting from aircraft class M operations, because of the greater number of movements of the class L aircraft.

The worksheet also shows the calculations involved in calculating the total NEF value from the NEF (ij) values in accordance with Equation 2.

* The EPNL values in column (a) might be determined by measurement or by estimation using the EPNL and flight profile information of Reference 1.

References:

- 1 "Effective Perceived Noise Level versus Distance Curves for Civil Aircraft," Bolt, Beranek and Newman, Inc., for the EPA
- 2 "Aircraft Sound Description System Application Procedures, Volume III - Data Tables, Report No. FAA-EQ-74-2, III, September 1974, FAA/DOT.

TABLE I

Worksheet showing sample calculations to determine total NEF values at a single ground position.

| Aircraft Class | (a) EPNL EPNdB | (b) No. of Movements | | (d) (b)+16.67 (c) | (e) 10 log (d) | NEF (a)+(e) -88 |
|----------------|----------------------|-------------------------|-----------|----------------------|-------------------|-----------------------|
| | | N (day) | N (night) | | | |
| L | 90 | 30 | 4 | 96.88 | 19.85 | 21.85 |
| M | 95 | 2 | 1 | 18.67 | 12.71 | 19.71 |
| N | 98 | 5 | 1 | 21.67 | 13.36 | 23.36 |
| NEF (total) | | | | | | 26.7 |

$$\text{NEF (total)} = 10 \log \left(\text{antilog} \frac{21.85}{10} + \text{antilog} \frac{19.71}{10} + \text{antilog} \frac{23.36}{10} \right)$$

$$= 10 \log (153.1 + 93.5 + 216.8) = 10 \log 463.4$$

$$= 26.7$$

Source: "Community Noise Exposure Resulting from Aircraft Operations: Application Guide for Predictive Procedure" Bolt, Beranek and Newman, Inc., November 1974.

TABLE A-II-1

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | | Four Engine LBPR Turbofan Transport Aircraft - 707 & DC-8 with JT3D Series Engines (Note: Subtract 2 dB for DC-8-63 Aircraft) | | | | | | | | | | | |
|------------------|-------------------------|---|--------|------------------------|-------------------------|--------|------------------------|--------------------------|--------|------------------------|--------------------------|--------|------------------------|
| Operation: | | Approach 160 Kt Fn = 6000 lbs | | | 160 Kt Fn = 8000 lbs | | | 160 Kt Fn = 10000 lbs | | | 160 Kt Fn = 12000 lbs | | |
| Distance, ft. | Power: | EPNL, dB | | Ground to Ground | EPNL, dB | | Ground to Ground | EPNL, dB | | Ground to Ground | EPNL, dB | | Ground to Ground |
| | | Air to Ground | Ground | | Air to Ground | Ground | | Air to Ground | Ground | | Air to Ground | Ground | |
| 200 | 160 Kt Fn = 4000 lbs | 120.0 | 120.0 | 120.0 | 122.5 | 122.5 | 124.5 | 124.5 | 126.0 | 126.0 | 127.0 | 127.0 | 127.5 |
| 250 | | 118.5 | 118.5 | 118.5 | 121.0 | 121.0 | 122.9 | 122.9 | 124.4 | 124.4 | 125.4 | 125.4 | 125.9 |
| 315 | | 116.9 | 116.9 | 116.9 | 119.4 | 119.4 | 121.2 | 121.2 | 122.7 | 122.7 | 123.7 | 123.7 | 124.2 |
| 400 | | 115.0 | 115.0 | 115.0 | 117.5 | 117.5 | 119.5 | 119.5 | 121.0 | 121.0 | 122.0 | 122.0 | 122.5 |
| 500 | | 112.9 | 112.9 | 112.9 | 115.4 | 115.4 | 117.7 | 117.7 | 119.2 | 119.2 | 120.2 | 120.2 | 120.7 |
| 630 | | 110.7 | 110.7 | 110.7 | 113.2 | 113.2 | 115.7 | 115.7 | 117.3 | 117.3 | 118.4 | 118.4 | 118.9 |
| 800 | | 108.4 | 108.3 | 108.3 | 110.9 | 110.8 | 113.4 | 113.3 | 115.2 | 115.1 | 116.5 | 116.4 | 116.9 |
| 1,000 | | 106.0 | 105.8 | 105.8 | 108.5 | 108.3 | 111.0 | 110.8 | 113.0 | 112.8 | 114.5 | 114.3 | 114.7 |
| 1,250 | | 103.6 | 103.3 | 103.3 | 106.1 | 105.8 | 108.9 | 108.6 | 110.8 | 110.5 | 112.3 | 112.0 | 112.5 |
| 1,500 | | 101.1 | 100.7 | 100.7 | 103.6 | 103.2 | 106.2 | 105.8 | 108.5 | 108.1 | 110.0 | 109.6 | 110.1 |
| 2,000 | | 98.5 | 97.9 | 97.9 | 101.0 | 100.4 | 103.5 | 102.9 | 106.0 | 105.4 | 107.5 | 106.9 | 107.5 |
| 2,500 | | 95.5 | 94.6 | 94.6 | 98.0 | 97.1 | 100.5 | 99.6 | 102.9 | 102.0 | 104.6 | 103.7 | 104.4 |
| 3,150 | | 92.0 | 90.7 | 90.7 | 94.5 | 93.2 | 97.0 | 95.7 | 99.3 | 98.0 | 101.4 | 100.1 | 100.7 |
| 4,000 | | 88.0 | 86.0 | 86.0 | 90.5 | 88.5 | 93.0 | 91.0 | 95.5 | 93.5 | 98.0 | 96.0 | 96.9 |
| 5,000 | | 84.0 | 81.2 | 81.2 | 86.5 | 83.7 | 89.0 | 86.2 | 91.5 | 88.7 | 94.4 | 91.6 | 92.5 |
| 6,300 | | 80.2 | 75.2 | 75.2 | 82.7 | 78.7 | 85.2 | 81.2 | 87.5 | 83.5 | 90.5 | 86.5 | 88.3 |
| 8,000 | | 76.5 | 71.0 | 71.0 | 79.0 | 73.5 | 81.5 | 76.0 | 83.9 | 78.4 | 86.9 | 81.4 | 83.6 |
| 10,000 | | 73.0 | 65.8 | 65.8 | 75.5 | 68.3 | 78.0 | 70.8 | 80.5 | 73.3 | 83.5 | 76.3 | 79.2 |
| 12,500 | | 69.5 | 60.0 | 60.0 | 72.0 | 62.5 | 74.5 | 65.0 | 77.3 | 67.8 | 80.3 | 70.8 | 74.6 |
| 15,000 | | 66.0 | 54.3 | 54.3 | 68.5 | 56.8 | 71.0 | 59.3 | 74.0 | 62.3 | 77.0 | 65.3 | 69.0 |
| 20,000 | | 62.5 | 48.0 | 48.0 | 65.0 | 50.5 | 67.5 | 53.0 | 70.6 | 56.1 | 73.6 | 59.1 | 63.4 |
| 25,000 | | 58.9 | 40.9 | 40.9 | 61.4 | 43.4 | 63.9 | 45.9 | 67.0 | 49.0 | 70.0 | 52.0 | 57.5 |

TABLE A-II-2

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

Aircraft:

Four Engine LBPR Turbofan Transport Aircraft - 707 & DC-8
with JT3D Series Engines with Retrofit Lined NacellesOperation:
Airspeed:
Power:

| Distance, ft. | 160 Kt Fn = 4000 lbs | | | | 160 Kt Fn = 6000 lbs | | | | 160 Kt Fn = 8000 lbs | | | | 160 Kt Fn = 10000 lbs | | | | 160 Kt Fn = 12000 lbs | | | | Takeoff 160 Kt Fn = 15000 lbs | | | |
|------------------|-------------------------|------------------------|------------------|------------------------|-------------------------|------------------------|------------------|------------------------|-------------------------|------------------------|------------------|------------------------|--------------------------|------------------------|------------------|------------------------|--------------------------|------------------------|------------------|------------------------|-------------------------------------|------------------------|------------------|------------------------|
| | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | |
| | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground |
| 200 | 104.5 | 104.5 | 108.0 | 108.0 | 111.5 | 111.5 | 114.5 | 114.5 | 117.5 | 117.5 | 117.5 | 117.5 | 117.5 | 117.5 | 117.5 | 117.5 | 117.5 | 117.5 | 117.5 | 117.5 | 120.5 | 120.5 | 120.5 | 120.5 |
| 250 | 103.3 | 103.3 | 106.8 | 106.8 | 110.3 | 110.3 | 113.3 | 113.3 | 116.3 | 116.3 | 116.3 | 116.3 | 116.3 | 116.3 | 116.3 | 116.3 | 116.3 | 116.3 | 116.3 | 116.3 | 119.4 | 119.4 | 119.4 | 119.4 |
| 315 | 101.9 | 101.9 | 105.5 | 105.5 | 109.0 | 109.0 | 112.0 | 112.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 115.0 | 118.2 | 118.2 | 118.2 | 118.2 |
| 400 | 100.5 | 100.5 | 104.0 | 104.0 | 107.5 | 107.5 | 110.5 | 110.5 | 113.5 | 113.5 | 113.5 | 113.5 | 113.5 | 113.5 | 113.5 | 113.5 | 113.5 | 113.5 | 113.5 | 113.5 | 117.0 | 117.0 | 117.0 | 117.0 |
| 500 | 99.1 | 99.1 | 102.3 | 102.3 | 105.7 | 105.7 | 108.8 | 108.8 | 111.8 | 111.8 | 111.8 | 111.8 | 111.8 | 111.8 | 111.8 | 111.8 | 111.8 | 111.8 | 111.8 | 111.8 | 115.8 | 115.8 | 115.8 | 115.8 |
| 630 | 97.6 | 97.6 | 100.6 | 100.6 | 103.8 | 103.8 | 107.1 | 107.1 | 110.1 | 110.1 | 110.1 | 110.1 | 110.1 | 110.1 | 110.1 | 110.1 | 110.1 | 110.1 | 110.1 | 110.1 | 114.6 | 114.6 | 114.6 | 114.6 |
| 800 | 96.1 | 95.9 | 98.8 | 98.6 | 101.9 | 101.7 | 105.3 | 105.1 | 108.3 | 108.1 | 108.3 | 108.1 | 108.3 | 108.1 | 108.3 | 108.1 | 108.3 | 108.1 | 108.3 | 108.1 | 113.3 | 113.3 | 113.3 | 113.1 |
| 1,000 | 94.8 | 94.4 | 97.0 | 96.6 | 100.0 | 99.6 | 103.5 | 103.1 | 106.5 | 106.1 | 106.5 | 106.1 | 106.5 | 106.1 | 106.5 | 106.1 | 106.5 | 106.1 | 106.5 | 106.1 | 112.0 | 111.6 | 111.6 | 111.6 |
| 1,250 | 92.6 | 91.9 | 95.1 | 94.4 | 98.0 | 97.3 | 101.6 | 100.9 | 104.7 | 104.0 | 104.7 | 104.0 | 104.7 | 104.0 | 104.7 | 104.0 | 104.7 | 104.0 | 104.7 | 104.0 | 110.6 | 109.9 | 109.9 | 109.9 |
| 1,600 | 90.7 | 89.6 | 93.2 | 92.1 | 96.0 | 94.9 | 99.7 | 98.6 | 102.9 | 101.8 | 102.9 | 101.8 | 102.9 | 101.8 | 102.9 | 101.8 | 102.9 | 101.8 | 102.9 | 101.8 | 109.0 | 107.9 | 107.9 | 107.9 |
| 2,000 | 88.5 | 86.8 | 91.6 | 89.3 | 94.0 | 92.3 | 97.5 | 95.8 | 101.0 | 99.3 | 101.0 | 99.3 | 101.0 | 99.3 | 101.0 | 99.3 | 101.0 | 99.3 | 101.0 | 99.3 | 107.0 | 105.3 | 105.3 | 105.3 |
| 2,500 | 86.1 | 83.4 | 88.6 | 85.9 | 91.6 | 88.9 | 95.2 | 92.5 | 98.8 | 96.1 | 98.8 | 96.1 | 98.8 | 96.1 | 98.8 | 96.1 | 98.8 | 96.1 | 98.8 | 96.1 | 104.8 | 102.1 | 102.1 | 102.1 |
| 3,150 | 83.3 | 79.5 | 85.8 | 82.0 | 88.8 | 85.0 | 92.7 | 88.9 | 96.5 | 92.7 | 96.5 | 92.7 | 96.5 | 92.7 | 96.5 | 92.7 | 96.5 | 92.7 | 96.5 | 92.7 | 102.5 | 98.7 | 98.7 | 98.7 |
| 4,000 | 80.5 | 75.5 | 83.0 | 78.0 | 86.0 | 81.0 | 90.0 | 85.0 | 94.0 | 89.0 | 94.0 | 89.0 | 94.0 | 89.0 | 94.0 | 89.0 | 94.0 | 89.0 | 94.0 | 89.0 | 100.0 | 95.0 | 95.0 | 95.0 |
| 5,000 | 77.6 | 71.4 | 80.1 | 73.9 | 83.1 | 76.9 | 87.1 | 80.9 | 91.1 | 84.9 | 91.1 | 84.9 | 91.1 | 84.9 | 91.1 | 84.9 | 91.1 | 84.9 | 91.1 | 84.9 | 97.4 | 91.2 | 91.2 | 91.2 |
| 6,300 | 74.6 | 67.1 | 77.1 | 69.6 | 80.1 | 72.6 | 83.9 | 76.4 | 87.9 | 80.4 | 87.9 | 80.4 | 87.9 | 80.4 | 87.9 | 80.4 | 87.9 | 80.4 | 87.9 | 80.4 | 94.7 | 87.2 | 87.2 | 87.2 |
| 8,000 | 71.6 | 62.8 | 74.1 | 65.3 | 77.1 | 68.3 | 80.7 | 71.9 | 84.7 | 75.9 | 84.7 | 75.9 | 84.7 | 75.9 | 84.7 | 75.9 | 84.7 | 75.9 | 84.7 | 75.9 | 91.9 | 83.1 | 83.1 | 83.1 |
| 10,000 | 68.5 | 58.4 | 71.0 | 60.9 | 74.0 | 63.9 | 77.5 | 67.4 | 81.5 | 71.4 | 81.5 | 71.4 | 81.5 | 71.4 | 81.5 | 71.4 | 81.5 | 71.4 | 81.5 | 71.4 | 89.0 | 78.9 | 78.9 | 78.9 |
| 12,500 | 65.1 | 53.6 | 67.6 | 56.1 | 70.6 | 59.1 | 74.3 | 62.8 | 78.3 | 66.8 | 78.3 | 66.8 | 78.3 | 66.8 | 78.3 | 66.8 | 78.3 | 66.8 | 78.3 | 66.8 | 86.1 | 74.6 | 74.6 | 74.6 |
| 16,000 | 61.5 | 48.5 | 64.0 | 51.0 | 67.0 | 54.0 | 71.0 | 58.0 | 75.0 | 62.0 | 75.0 | 62.0 | 75.0 | 62.0 | 75.0 | 62.0 | 75.0 | 62.0 | 75.0 | 62.0 | 83.0 | 70.0 | 70.0 | 70.0 |
| 20,000 | 57.9 | 43.1 | 60.4 | 45.2 | 63.4 | 48.0 | 67.6 | 52.8 | 71.6 | 56.8 | 71.6 | 56.8 | 71.6 | 56.8 | 71.6 | 56.8 | 71.6 | 56.8 | 71.6 | 56.8 | 79.6 | 64.0 | 64.0 | 64.0 |
| 25,000 | 54.0 | 36.8 | 56.8 | 39.3 | 59.0 | 42.0 | 62.0 | 45.5 | 68.0 | 50.0 | 68.0 | 50.0 | 68.0 | 50.0 | 68.0 | 50.0 | 68.0 | 50.0 | 68.0 | 50.0 | 75.0 | 55.0 | 55.0 | 55.0 |

TABLE A-II-2

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | | Four Engine LBPR Turbofan Transport Aircraft - 707 & DC-8 with JT3D Series Engines with Retrofit Lined Nacelles | | | | | | | | | | | | | | | | | |
|-----------------------------------|----------|--|--------------|----------|-------------------------|--------------|----------|-------------------------|--------------|----------|--------------------------|--------------|----------|--------------------------|--------------|----------|-------------------------------------|--------------|--|
| Operation: Airspeed: Power: | | 160 Kt Fn = 4000 lbs | | | 160 Kt Fn = 6000 lbs | | | 160 Kt Fn = 8000 lbs | | | 160 Kt Fn = 10000 lbs | | | 160 Kt Fn = 12000 lbs | | | Takeoff 160 Kt Fn = 15000 lbs | | |
| Distance, ft. | EPNL, dB | Ground | | EPNL, dB | Ground | | EPNL, dB | Ground | | EPNL, dB | Ground | | EPNL, dB | Ground | | EPNL, dB | Ground | | |
| | | Air to Ground | to Ground | | Air to Ground | to Ground | | Air to Ground | to Ground | | Air to Ground | to Ground | | Air to Ground | to Ground | | Air to Ground | to Ground | |
| 200 | | 104.5 | 104.5 | 108.0 | 108.0 | 111.5 | 111.5 | 114.5 | 114.5 | 117.5 | 117.5 | 120.5 | 120.5 | 120.5 | 120.5 | 120.5 | 120.5 | 120.5 | |
| 250 | | 103.3 | 103.3 | 106.8 | 106.8 | 110.3 | 110.3 | 113.3 | 113.3 | 116.3 | 116.3 | 119.4 | 119.4 | 119.4 | 119.4 | 119.4 | 119.4 | 119.4 | |
| 315 | | 101.9 | 101.9 | 105.5 | 105.5 | 109.0 | 109.0 | 112.0 | 112.0 | 115.0 | 115.0 | 118.2 | 118.2 | 118.2 | 118.2 | 118.2 | 118.2 | 118.2 | |
| 400 | | 100.5 | 100.5 | 104.0 | 104.0 | 107.5 | 107.5 | 110.5 | 110.5 | 113.5 | 113.5 | 117.0 | 117.0 | 117.0 | 117.0 | 117.0 | 117.0 | 117.0 | |
| 500 | | 99.1 | 99.1 | 102.3 | 102.3 | 105.7 | 105.7 | 108.8 | 108.8 | 111.8 | 111.8 | 115.8 | 115.8 | 115.8 | 115.8 | 115.8 | 115.8 | 115.8 | |
| 630 | | 97.6 | 97.5 | 100.6 | 100.5 | 103.8 | 103.7 | 107.1 | 107.0 | 110.1 | 110.1 | 114.6 | 114.5 | 114.5 | 114.5 | 114.5 | 114.5 | 114.5 | |
| 800 | | 96.1 | 95.9 | 98.8 | 98.6 | 101.9 | 101.7 | 105.3 | 105.1 | 108.3 | 108.1 | 113.3 | 113.1 | 113.1 | 113.1 | 113.1 | 113.1 | 113.1 | |
| 1,000 | | 94.8 | 94.4 | 97.0 | 96.6 | 100.0 | 99.6 | 103.5 | 103.1 | 106.5 | 106.1 | 112.0 | 111.6 | 111.6 | 111.6 | 111.6 | 111.6 | 111.6 | |
| 1,250 | | 92.6 | 91.9 | 95.1 | 94.4 | 98.0 | 97.3 | 101.6 | 100.9 | 104.7 | 104.0 | 110.6 | 109.9 | 109.9 | 109.9 | 109.9 | 109.9 | 109.9 | |
| 1,600 | | 90.7 | 89.6 | 93.2 | 92.1 | 96.0 | 94.9 | 99.7 | 98.6 | 102.9 | 101.8 | 109.0 | 107.9 | 107.9 | 107.9 | 107.9 | 107.9 | 107.9 | |
| 2,000 | | 88.5 | 86.8 | 91.0 | 89.3 | 94.0 | 92.3 | 97.5 | 95.8 | 101.0 | 99.3 | 107.0 | 105.3 | 105.3 | 105.3 | 105.3 | 105.3 | 105.3 | |
| 2,500 | | 86.1 | 83.4 | 88.6 | 85.9 | 91.6 | 88.9 | 95.2 | 92.5 | 98.8 | 96.1 | 104.8 | 102.1 | 102.1 | 102.1 | 102.1 | 102.1 | 102.1 | |
| 3,150 | | 83.3 | 79.5 | 85.8 | 82.0 | 88.8 | 85.0 | 92.7 | 88.9 | 96.5 | 92.7 | 102.5 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | 98.7 | |
| 4,000 | | 80.5 | 75.5 | 83.0 | 78.0 | 86.0 | 81.0 | 90.0 | 85.0 | 94.0 | 89.0 | 100.0 | 95.0 | 95.0 | 95.0 | 95.0 | 95.0 | 95.0 | |
| 5,000 | | 77.6 | 71.4 | 80.1 | 73.9 | 83.1 | 76.9 | 87.1 | 80.9 | 91.1 | 84.9 | 97.4 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | 91.2 | |
| 6,300 | | 74.6 | 67.1 | 77.1 | 69.6 | 80.1 | 72.6 | 83.9 | 76.4 | 87.9 | 80.4 | 94.7 | 87.2 | 87.2 | 87.2 | 87.2 | 87.2 | 87.2 | |
| 8,000 | | 71.6 | 62.8 | 74.1 | 65.3 | 77.1 | 68.3 | 80.7 | 71.9 | 84.7 | 75.9 | 91.9 | 83.1 | 83.1 | 83.1 | 83.1 | 83.1 | 83.1 | |
| 10,000 | | 68.5 | 58.4 | 71.0 | 60.9 | 74.0 | 63.9 | 77.5 | 67.4 | 81.5 | 71.4 | 89.0 | 78.9 | 78.9 | 78.9 | 78.9 | 78.9 | 78.9 | |
| 12,500 | | 65.1 | 53.6 | 67.6 | 56.1 | 70.6 | 59.1 | 74.3 | 62.8 | 78.3 | 66.8 | 86.1 | 74.6 | 74.6 | 74.6 | 74.6 | 74.6 | 74.6 | |
| 16,000 | | 61.5 | 48.5 | 64.0 | 51.0 | 67.0 | 54.0 | 71.0 | 58.0 | 75.0 | 62.0 | 83.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | 70.0 | |
| 20,000 | | 57.9 | 43.1 | 60.4 | 45.2 | 63.4 | 48.6 | 67.6 | 52.8 | 71.6 | 56.8 | 79.6 | 64.8 | 64.8 | 64.8 | 64.8 | 64.8 | 64.8 | |
| 25,000 | | 54.3 | 36.8 | 56.8 | 39.3 | 59.8 | 42.3 | 64.0 | 46.5 | 68.0 | 50.5 | 76.0 | 58.5 | 58.5 | 58.5 | 58.5 | 58.5 | 58.5 | |

TABLE A-II-3

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | | Three Engine LB33 Turbofan Aircraft - 727 with JT8D Series Engines | | | | | | | | | | | | | | | | | | | |
|-----------------------------------|------------------|---|--------------|------------------|--------------|-------------------------------------|--------------|------------------|--------------|-------------------------|--------------|------------------|--------------|--------------------------|--------------|------------------|--------------|-------------------------------------|--------------|------------------|--------------|
| Operation: Airspeed: Power: | Distance, ft. | 160 Kt Fn = 4000 lbs | | | | Approach 160 Kt Fn = 6000 lbs | | | | 160 Kt Fn = 8000 lbs | | | | 160 Kt Fn = 10000 lbs | | | | Takeoff 160 Kt Fn = 12000 lbs | | | |
| | | EPNL, dB | | Ground | | EPNL, dB | | Ground | | EPNL, dB | | Ground | | EPNL, dB | | Ground | | EPNL, dB | | Ground | |
| | | Air to Ground | to Ground | Air to Ground | to Ground | Air to Ground | to Ground | Air to Ground | to Ground | Air to Ground | to Ground | Air to Ground | to Ground | Air to Ground | to Ground | Air to Ground | to Ground | Air to Ground | to Ground | Air to Ground | to Ground |
| | 200 | 112.0 | 112.0 | 112.0 | 112.0 | 114.5 | 114.5 | 114.5 | 114.5 | 116.5 | 116.5 | 116.5 | 116.5 | 118.5 | 118.5 | 118.5 | 118.5 | 121.0 | 121.0 | 121.0 | 121.0 |
| | 250 | 110.7 | 110.7 | 110.7 | 110.7 | 113.2 | 113.2 | 113.2 | 113.2 | 115.2 | 115.2 | 115.2 | 115.2 | 117.3 | 117.3 | 117.3 | 117.3 | 119.8 | 119.8 | 119.8 | 119.8 |
| | 315 | 109.2 | 109.2 | 109.2 | 109.2 | 111.7 | 111.7 | 111.7 | 111.7 | 113.7 | 113.7 | 113.7 | 113.7 | 115.9 | 115.9 | 115.9 | 115.9 | 118.4 | 118.4 | 118.4 | 118.4 |
| | 400 | 107.5 | 107.5 | 107.5 | 107.5 | 110.0 | 110.0 | 110.0 | 110.0 | 112.0 | 112.0 | 112.0 | 112.0 | 114.5 | 114.5 | 114.5 | 114.5 | 117.0 | 117.0 | 117.0 | 117.0 |
| | 500 | 105.3 | 105.3 | 105.3 | 105.3 | 107.8 | 107.8 | 107.8 | 107.8 | 109.8 | 109.8 | 109.8 | 109.8 | 112.7 | 112.7 | 112.7 | 112.7 | 115.6 | 115.6 | 115.6 | 115.6 |
| | 630 | 102.7 | 102.6 | 102.6 | 102.6 | 105.2 | 105.1 | 105.1 | 105.1 | 107.6 | 107.5 | 107.5 | 107.5 | 110.8 | 110.7 | 110.7 | 110.7 | 114.1 | 114.0 | 114.0 | 114.0 |
| | 800 | 100.1 | 99.9 | 99.9 | 99.9 | 102.6 | 102.4 | 102.4 | 102.4 | 105.3 | 105.1 | 105.1 | 105.1 | 108.9 | 108.7 | 108.7 | 108.7 | 112.6 | 112.4 | 112.4 | 112.4 |
| | 1,000 | 97.5 | 97.1 | 97.1 | 97.1 | 100.0 | 99.6 | 99.6 | 99.6 | 103.0 | 102.6 | 102.6 | 102.6 | 107.0 | 106.6 | 106.6 | 106.6 | 111.0 | 110.6 | 110.6 | 110.6 |
| | 1,250 | 94.8 | 94.4 | 94.4 | 94.4 | 97.4 | 96.8 | 96.8 | 96.8 | 100.7 | 100.1 | 100.1 | 100.1 | 105.0 | 104.4 | 104.4 | 104.4 | 109.4 | 108.8 | 108.8 | 108.8 |
| | 1,500 | 92.0 | 91.4 | 91.4 | 91.4 | 94.7 | 93.8 | 93.8 | 93.8 | 98.4 | 97.5 | 97.5 | 97.5 | 103.0 | 102.1 | 102.1 | 102.1 | 107.7 | 106.8 | 106.8 | 106.8 |
| | 2,000 | 89.0 | 87.8 | 87.8 | 87.8 | 92.0 | 90.8 | 90.8 | 90.8 | 96.0 | 94.8 | 94.8 | 94.8 | 101.0 | 99.8 | 99.8 | 99.8 | 106.0 | 104.8 | 104.8 | 104.8 |
| | 2,500 | 85.9 | 83.8 | 83.8 | 83.8 | 89.2 | 87.1 | 87.1 | 87.1 | 93.4 | 91.3 | 91.3 | 91.3 | 98.9 | 96.8 | 96.8 | 96.8 | 104.0 | 101.9 | 101.9 | 101.9 |
| | 3,150 | 82.7 | 79.8 | 79.8 | 79.8 | 86.4 | 83.5 | 83.5 | 83.5 | 100.7 | 87.8 | 87.8 | 87.8 | 96.8 | 93.9 | 93.9 | 93.9 | 101.8 | 98.9 | 98.9 | 98.9 |
| | 4,000 | 79.5 | 75.0 | 75.0 | 75.0 | 83.5 | 79.0 | 79.0 | 79.0 | 88.0 | 83.5 | 83.5 | 83.5 | 94.5 | 90.0 | 90.0 | 90.0 | 99.5 | 95.0 | 95.0 | 95.0 |
| | 5,000 | 76.2 | 70.5 | 70.5 | 70.5 | 80.5 | 74.8 | 74.8 | 74.8 | 85.3 | 79.6 | 79.6 | 79.6 | 92.2 | 86.5 | 86.5 | 86.5 | 97.2 | 91.5 | 91.5 | 91.5 |
| | 6,300 | 72.8 | 65.7 | 65.7 | 65.7 | 77.4 | 70.3 | 70.3 | 70.3 | 82.6 | 75.5 | 75.5 | 75.5 | 89.9 | 82.8 | 82.8 | 82.8 | 94.9 | 87.8 | 87.8 | 87.8 |
| | 8,000 | 69.4 | 60.9 | 60.9 | 60.9 | 74.2 | 65.7 | 65.7 | 65.7 | 79.8 | 71.3 | 71.3 | 71.3 | 87.5 | 79.0 | 79.0 | 79.0 | 92.5 | 84.0 | 84.0 | 84.0 |
| | 10,000 | 66.0 | 56.2 | 56.2 | 56.2 | 71.0 | 61.2 | 61.2 | 61.2 | 77.0 | 67.2 | 67.2 | 67.2 | 87.5 | 75.2 | 75.2 | 75.2 | 90.0 | 80.2 | 80.2 | 80.2 |
| | 12,500 | 62.5 | 51.4 | 51.4 | 51.4 | 67.8 | 56.7 | 56.7 | 56.7 | 74.2 | 63.1 | 63.1 | 63.1 | 82.2 | 71.1 | 71.1 | 71.1 | 87.2 | 76.1 | 76.1 | 76.1 |
| | 16,000 | 59.0 | 46.2 | 46.2 | 46.2 | 64.5 | 51.7 | 51.7 | 51.7 | 71.0 | 58.2 | 58.2 | 58.2 | 79.0 | 66.2 | 66.2 | 66.2 | 84.0 | 71.2 | 71.2 | 71.2 |
| | 20,000 | 55.2 | 40.5 | 40.5 | 40.5 | 60.9 | 46.2 | 46.2 | 46.2 | 67.6 | 52.9 | 52.9 | 52.9 | 75.6 | 60.9 | 60.9 | 60.9 | 80.6 | 65.9 | 65.9 | 65.9 |
| | 25,000 | 51.3 | 33.4 | 33.4 | 33.4 | 57.1 | 39.2 | 39.2 | 39.2 | 64.0 | 46.1 | 46.1 | 46.1 | 72.0 | 54.1 | 54.1 | 54.1 | 77.0 | 59.1 | 59.1 | 59.1 |

TABLE A-II-4

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Two Engine LBPR Turbofan Aircraft - 737 & DC-9 with JT8D Series Engines | | | | | | | | | | | | | | | | |
|--|-------------------------|------------------------|--------|-------------------------------------|------------------------|--------|-------------------------|------------------------|--------|--------------------------|------------------------|--------|-------------------------------------|------------------------|--------|-------|
| Aircraft: | 160 Kt Fn = 4000 lbs | | | Approach 160 Kt Fn = 6000 lbs | | | 160 Kt Fn = 8000 lbs | | | 160 Kt Fn = 10000 lbs | | | Takeoff 160 Kt Fn = 12000 lbs | | | |
| | EPNL, dB | | | EPNL, dB | | | EPNL, dB | | | EPNL, dB | | | EPNL, dB | | | |
| | Air to Ground | Ground to Ground | Ground | Air to Ground | Ground to Ground | Ground | Air to Ground | Ground to Ground | Ground | Air to Ground | Ground to Ground | Ground | Air to Ground | Ground to Ground | Ground | |
| | 200 | 110.0 | 110.0 | 112.5 | 112.5 | 114.5 | 114.5 | 114.5 | 116.5 | 116.5 | 116.5 | 116.5 | 119.0 | 119.0 | 119.0 | 119.0 |
| | 250 | 108.7 | 108.7 | 111.2 | 111.2 | 113.2 | 113.2 | 113.2 | 115.3 | 115.3 | 115.3 | 115.3 | 117.8 | 117.8 | 117.8 | 117.8 |
| | 315 | 107.2 | 107.2 | 109.7 | 109.7 | 111.7 | 111.7 | 111.7 | 113.9 | 113.9 | 113.9 | 113.9 | 116.4 | 116.4 | 116.4 | 116.4 |
| | 400 | 105.5 | 105.5 | 108.0 | 108.0 | 110.0 | 110.0 | 110.0 | 112.5 | 112.5 | 112.5 | 112.5 | 115.0 | 115.0 | 115.0 | 115.0 |
| | 500 | 103.3 | 103.3 | 105.8 | 105.8 | 107.8 | 107.8 | 107.8 | 110.7 | 110.7 | 110.7 | 110.7 | 113.6 | 113.6 | 113.6 | 113.6 |
| | 630 | 100.7 | 100.6 | 103.2 | 103.1 | 105.6 | 105.5 | 105.5 | 108.8 | 108.8 | 108.7 | 108.7 | 112.1 | 112.0 | 112.0 | 112.0 |
| | 800 | 98.1 | 97.9 | 100.6 | 100.4 | 103.3 | 103.1 | 103.1 | 106.9 | 106.9 | 106.7 | 106.7 | 110.6 | 110.4 | 110.4 | 110.4 |
| | 1,000 | 95.5 | 95.1 | 98.0 | 97.6 | 101.0 | 100.6 | 100.6 | 105.0 | 105.0 | 104.6 | 104.6 | 109.0 | 108.6 | 108.6 | 108.6 |
| | 1,250 | 92.8 | 92.2 | 95.4 | 94.8 | 98.7 | 98.1 | 98.1 | 103.0 | 103.0 | 102.4 | 102.4 | 107.4 | 106.8 | 106.8 | 106.8 |
| | 1,600 | 90.0 | 89.1 | 92.7 | 91.8 | 96.4 | 95.5 | 95.5 | 101.0 | 101.0 | 100.1 | 100.1 | 105.7 | 104.8 | 104.8 | 104.8 |
| | 2,000 | 87.0 | 85.5 | 90.0 | 88.8 | 94.0 | 92.8 | 92.8 | 99.0 | 99.0 | 97.8 | 97.8 | 104.0 | 102.8 | 102.8 | 102.8 |
| | 2,500 | 83.9 | 81.8 | 87.2 | 85.1 | 91.4 | 89.3 | 89.3 | 96.9 | 96.9 | 94.8 | 94.8 | 102.0 | 99.9 | 99.9 | 99.9 |
| | 3,150 | 80.7 | 77.8 | 84.4 | 81.5 | 88.7 | 85.8 | 85.8 | 94.8 | 94.8 | 91.9 | 91.9 | 99.8 | 96.9 | 96.9 | 96.9 |
| | 4,000 | 77.5 | 73.0 | 81.5 | 77.0 | 86.0 | 81.5 | 81.5 | 92.5 | 92.5 | 88.0 | 88.0 | 97.5 | 93.0 | 93.0 | 93.0 |
| | 5,000 | 74.2 | 68.5 | 78.5 | 72.8 | 83.3 | 77.6 | 77.6 | 90.2 | 90.2 | 84.5 | 84.5 | 95.2 | 89.5 | 89.5 | 89.5 |
| | 6,300 | 70.8 | 63.7 | 75.4 | 68.3 | 80.6 | 73.5 | 73.5 | 87.9 | 87.9 | 80.8 | 80.8 | 92.9 | 85.8 | 85.8 | 85.8 |
| | 8,000 | 67.4 | 58.9 | 72.2 | 63.7 | 77.8 | 69.3 | 69.3 | 85.5 | 85.5 | 77.0 | 77.0 | 90.5 | 82.0 | 82.0 | 82.0 |
| | 10,000 | 64.0 | 54.2 | 69.0 | 59.2 | 75.0 | 65.2 | 65.2 | 83.0 | 83.0 | 73.2 | 73.2 | 88.0 | 78.2 | 78.2 | 78.2 |
| | 12,500 | 60.5 | 49.4 | 65.8 | 54.7 | 72.2 | 61.1 | 61.1 | 80.2 | 80.2 | 69.1 | 69.1 | 85.2 | 74.1 | 74.1 | 74.1 |
| | 16,000 | 57.0 | 44.2 | 62.5 | 49.7 | 69.0 | 56.2 | 56.2 | 77.0 | 77.0 | 64.2 | 64.2 | 82.0 | 69.2 | 69.2 | 69.2 |
| | 20,000 | 53.2 | 38.5 | 58.9 | 44.2 | 65.6 | 50.9 | 50.9 | 73.6 | 73.6 | 58.9 | 58.9 | 78.6 | 63.9 | 63.9 | 63.9 |
| | 25,000 | 49.3 | 31.4 | 55.1 | 37.2 | 62.0 | 44.1 | 44.1 | 70.0 | 70.0 | 52.1 | 52.1 | 75.0 | 57.1 | 57.1 | 57.1 |

AD-A039 465

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ENVIRONMENTAL ASSESSMENT OF AIRPORT DEVELOPMENT
MAR 77

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ACTIONS. APPEND--ETC(U)
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TABLE A-II-5

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Four Engine HBPR Turbofan Transport Aircraft | | | | | | | | | | | | |
|--|-----------------------|------------------------|---------------------|------------------------|------------------------|---------------------|-----------------------|------------------------|---------------------|-----------------------|------------------------|---------------------|
| Aircraft: | Boeing 747-100A | | | Boeing 747-100A | | | Boeing 747-100D | | | Boeing 747-100D | | |
| | Blow-in-Door | Blow-in-Door | Fixed Lip | Blow-in-Door | Blow-in-Door | Fixed Lip | Blow-in-Door | Blow-in-Door | Fixed Lip | Blow-in-Door | Blow-in-Door | Fixed Lip |
| Operation: | JT9D Engines | | | JT9D Engines | | | JT9D Engines | | | JT9D Engines | | |
| | Takeoff | Takeoff | Approach | Takeoff | Takeoff | Approach | Takeoff | Takeoff | Approach | Takeoff | Takeoff | Approach |
| Airspeed: | 160 Kt | | | 160 Kt | | | 160 Kt | | | 160 Kt | | |
| | N ₁ = 3300 | | | N ₁ = 24000 | | | N ₁ = 3350 | | | N ₁ = 2400 | | |
| Power: | N ₁ = 3300 | | | N ₁ = 24000 | | | N ₁ = 3350 | | | N ₁ = 2400 | | |
| | N ₁ = 3300 | | | N ₁ = 24000 | | | N ₁ = 3350 | | | N ₁ = 2400 | | |
| Distance, ft. | EPNL, dB | | | EPNL, dB | | | EPNL, dB | | | EPNL, dB | | |
| | Air to Ground | Ground to Ground | Ground to Air | Air to Ground | Ground to Ground | Ground to Air | Air to Ground | Ground to Ground | Ground to Air | Air to Ground | Ground to Ground | Ground to Air |
| 200 | 123.5 | 123.5 | 117.5 | 117.5 | 117.5 | 118.0 | 118.0 | 118.0 | 118.0 | 110.5 | 110.5 | 110.5 |
| 250 | 122.5 | 122.5 | 116.4 | 116.4 | 116.4 | 117.0 | 117.0 | 117.0 | 117.0 | 109.4 | 109.4 | 109.4 |
| 315 | 121.3 | 121.3 | 115.1 | 115.1 | 115.1 | 115.8 | 115.8 | 115.8 | 115.8 | 108.1 | 108.1 | 108.1 |
| 400 | 120.0 | 120.0 | 113.5 | 113.5 | 113.5 | 114.5 | 114.5 | 114.5 | 114.5 | 106.5 | 106.5 | 106.5 |
| 500 | 118.5 | 118.5 | 111.7 | 111.7 | 111.7 | 113.0 | 113.0 | 113.0 | 113.0 | 104.7 | 104.7 | 104.7 |
| 630 | 116.9 | 116.8 | 109.9 | 109.9 | 109.9 | 111.4 | 111.4 | 111.3 | 111.3 | 102.9 | 102.9 | 102.9 |
| 800 | 115.2 | 115.0 | 108.0 | 107.9 | 107.9 | 109.7 | 109.7 | 109.5 | 109.5 | 101.0 | 100.9 | 100.9 |
| 1,000 | 113.5 | 113.1 | 106.0 | 105.7 | 105.7 | 108.0 | 107.6 | 107.6 | 107.6 | 99.0 | 98.7 | 98.7 |
| 1,250 | 111.8 | 111.2 | 103.9 | 103.4 | 103.4 | 106.2 | 105.6 | 105.6 | 105.6 | 96.9 | 96.4 | 96.4 |
| 1,600 | 109.8 | 108.9 | 101.7 | 100.9 | 100.9 | 104.4 | 103.5 | 103.5 | 103.5 | 94.8 | 94.0 | 94.0 |
| 2,000 | 107.0 | 105.5 | 99.5 | 98.4 | 98.4 | 102.5 | 101.0 | 101.0 | 101.0 | 92.5 | 91.4 | 91.4 |
| 2,500 | 104.3 | 101.9 | 97.0 | 95.4 | 95.4 | 100.6 | 98.2 | 98.2 | 98.2 | 90.1 | 88.5 | 88.5 |
| 3,150 | 101.5 | 97.7 | 93.7 | 90.6 | 90.6 | 98.6 | 94.8 | 94.8 | 94.8 | 87.6 | 84.5 | 84.5 |
| 4,000 | 98.0 | 93.8 | 90.5 | 85.9 | 85.9 | 96.5 | 92.3 | 92.3 | 92.3 | 84.5 | 79.9 | 79.9 |
| 5,000 | 95.5 | 89.9 | 86.9 | 80.8 | 80.8 | 94.3 | 88.7 | 88.7 | 88.7 | 81.9 | 75.8 | 75.8 |
| 6,300 | 92.4 | 85.4 | 83.3 | 75.7 | 75.7 | 91.9 | 84.9 | 84.9 | 84.9 | 79.2 | 71.6 | 71.6 |
| 8,000 | 89.5 | 81.1 | 79.7 | 70.6 | 70.6 | 89.5 | 81.1 | 81.1 | 81.1 | 76.4 | 67.3 | 67.3 |
| 10,000 | 87.0 | 76.2 | 76.0 | 65.4 | 65.4 | 87.0 | 76.2 | 76.2 | 76.2 | 74.0 | 63.4 | 63.4 |
| 12,500 | 84.3 | 72.3 | 72.5 | 61.3 | 61.3 | 84.3 | 72.3 | 72.3 | 72.3 | 70.9 | 59.7 | 59.7 |
| 16,000 | 81.5 | 67.9 | 69.0 | 55.9 | 55.9 | 81.5 | 67.9 | 67.9 | 67.9 | 67.5 | 54.4 | 54.4 |
| 20,000 | 78.5 | 63.0 | 65.6 | 50.3 | 50.3 | 78.3 | 62.8 | 62.8 | 62.8 | 54.1 | 48.8 | 48.8 |
| 25,000 | 74.5 | 56.3 | 62.0 | 41.6 | 41.6 | 74.5 | 56.3 | 56.3 | 56.3 | 60.5 | 40.1 | 40.1 |

TABLE A-II-6

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | Three Engine HBPR Turbofan Transport Aircraft | | | | | | | | | | | |
|------------------|---|------------------------|--------|--|------------------------|--------|--|------------------------|--------|------------------------------------|------------------------|--------|
| | DC-10-10 CF6 Series Engines | | | DC-10-10 CF6 Series Engines (50° Flaps) | | | DC-10-10 CF6 Series Engines (25° Flaps) | | | DC-10-40 JT8D Series Engines | | |
| | Takeoff 160 Kt $N_1 = 3420$ | | | Approach 160 Kt $N_1 = 2600$ | | | Approach 160 Kt $N_1 = 2300$ | | | Takeoff 160 Kt $N_1 = 3350$ | | |
| Distance, ft. | EPNL, dB | | | EPNL, dB | | | EPNL, dB | | | EPNL, dB | | |
| | Air to Ground | Ground to Ground | Ground | Air to Ground | Ground to Ground | Ground | Air to Ground | Ground to Ground | Ground | Air to Ground | Ground to Ground | Ground |
| 200 | 112.0 | 112.0 | 109.5 | 109.5 | 109.5 | 106.0 | 106.0 | 106.0 | 113.0 | 113.0 | 113.0 | 108.5 |
| 250 | 111.0 | 111.0 | 108.4 | 108.4 | 108.4 | 104.7 | 104.7 | 104.7 | 112.0 | 112.0 | 112.0 | 107.4 |
| 315 | 109.8 | 109.8 | 107.1 | 107.1 | 107.1 | 103.2 | 103.2 | 103.2 | 110.8 | 110.8 | 110.8 | 106.1 |
| 400 | 108.5 | 108.5 | 105.5 | 105.5 | 105.5 | 101.5 | 101.5 | 101.5 | 109.5 | 109.5 | 109.5 | 104.5 |
| 500 | 107.0 | 107.0 | 103.7 | 103.7 | 103.7 | 99.7 | 99.7 | 99.7 | 108.0 | 108.0 | 108.0 | 102.7 |
| 630 | 105.4 | 105.3 | 101.9 | 101.9 | 101.9 | 97.9 | 97.9 | 97.9 | 106.4 | 106.3 | 106.3 | 100.9 |
| 800 | 103.7 | 103.5 | 100.0 | 99.9 | 99.9 | 96.0 | 96.0 | 95.9 | 104.7 | 104.5 | 104.5 | 98.9 |
| 1,000 | 102.0 | 101.6 | 98.0 | 97.7 | 97.7 | 94.0 | 94.0 | 93.7 | 103.0 | 102.6 | 102.6 | 96.7 |
| 1,250 | 100.2 | 99.6 | 95.9 | 95.4 | 95.4 | 91.9 | 91.9 | 91.4 | 101.2 | 100.6 | 100.6 | 94.4 |
| 1,600 | 98.4 | 97.5 | 93.8 | 93.0 | 93.0 | 89.8 | 89.8 | 89.0 | 99.4 | 98.5 | 98.5 | 92.0 |
| 2,000 | 96.5 | 95.0 | 91.5 | 90.4 | 90.4 | 87.5 | 87.5 | 86.4 | 97.5 | 96.0 | 96.0 | 89.4 |
| 2,500 | 94.6 | 92.2 | 89.1 | 87.5 | 87.5 | 85.0 | 85.0 | 83.4 | 95.6 | 93.2 | 93.2 | 86.5 |
| 3,150 | 92.6 | 88.8 | 86.6 | 83.5 | 83.5 | 82.3 | 82.3 | 79.2 | 93.6 | 89.8 | 89.8 | 82.5 |
| 4,000 | 90.5 | 86.3 | 84.0 | 79.4 | 79.4 | 79.5 | 79.5 | 74.9 | 91.5 | 87.3 | 87.3 | 78.4 |
| 5,000 | 88.3 | 82.7 | 81.4 | 75.3 | 75.3 | 76.7 | 76.7 | 70.6 | 89.3 | 83.7 | 83.7 | 74.3 |
| 6,300 | 85.9 | 78.9 | 78.7 | 71.1 | 71.1 | 73.8 | 73.8 | 66.2 | 86.9 | 79.9 | 79.9 | 70.1 |
| 8,000 | 83.5 | 75.1 | 75.9 | 66.8 | 66.8 | 70.9 | 70.9 | 61.8 | 84.5 | 76.1 | 76.1 | 65.8 |
| 10,000 | 81.0 | 70.2 | 73.0 | 62.4 | 62.4 | 68.0 | 68.0 | 57.4 | 82.0 | 71.2 | 71.2 | 61.4 |
| 12,500 | 78.3 | 76.3 | 69.9 | 58.7 | 58.7 | 64.6 | 64.6 | 53.4 | 79.3 | 67.3 | 67.3 | 57.7 |
| 16,000 | 75.5 | 61.9 | 66.5 | 53.4 | 53.4 | 61.0 | 61.0 | 47.9 | 76.5 | 62.9 | 62.9 | 52.4 |
| 20,000 | 72.3 | 56.8 | 63.1 | 47.8 | 47.8 | 57.4 | 57.4 | 42.1 | 73.3 | 57.8 | 57.8 | 46.8 |
| 25,000 | 68.5 | 53.3 | 59.5 | 39.1 | 39.1 | 53.8 | 53.8 | 33.4 | 69.5 | 51.3 | 51.3 | 38.1 |

TABLE A-II-7

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | Cessna Citation | | | | Commodore Jet Commander 1121 | | | | Business Jet Aircraft | | | | Dassault Fan Jet Falcon, Two | | | | Dassault Fan Jet Falcon, Two | | | |
|---------------|------------------------------|--------|---------------|--------|------------------------------|--------|---------------|--------|------------------------------|--------|---------------|--------|------------------------------|--------|---------------|--------|------------------------------|--------|---------------|--------|
| | Two JT150D-1 | | | | Two CJ510-5 | | | | Two CJ610-5 | | | | Two CJ700-2B | | | | Two CJ700-2B | | | |
| | Turbofan Eng. Takeoff 115 Kt | | | | Turbofan Eng. Takeoff 115 Kt | | | | Turbofan Eng. Takeoff 140 Kt | | | | Turbofan Eng. Takeoff 140 Kt | | | | Turbofan Eng. Takeoff 140 Kt | | | |
| Distance, ft. | EPNL, dB | | | | EPNL, dB | | | | EPNL, dB | | | | EPNL, dB | | | | EPNL, dB | | | |
| | Ground to Ground | | | | Ground to Ground | | | | Ground to Ground | | | | Ground to Ground | | | | Ground to Ground | | | |
| | Air to Ground | Ground | Air to Ground | Ground | Air to Ground | Ground | Air to Ground | Ground | Air to Ground | Ground | Air to Ground | Ground | Air to Ground | Ground | Air to Ground | Ground | Air to Ground | Ground | Air to Ground | Ground |
| 200 | 101.0 | 101.0 | 91.2 | 91.2 | 123.3 | 123.3 | 123.3 | 123.3 | 110.5 | 110.5 | 110.5 | 110.5 | 111.4 | 111.4 | 111.4 | 111.4 | 108.0 | 108.0 | 108.0 | 108.0 |
| 250 | 99.7 | 99.7 | 89.9 | 89.9 | 121.9 | 121.9 | 121.9 | 121.9 | 109.3 | 109.3 | 109.3 | 109.3 | 109.7 | 109.7 | 109.7 | 109.7 | 106.6 | 106.6 | 106.6 | 106.6 |
| 315 | 98.4 | 98.4 | 88.5 | 88.5 | 120.4 | 120.4 | 120.4 | 120.4 | 108.1 | 108.1 | 108.1 | 108.1 | 107.8 | 107.8 | 107.8 | 107.8 | 105.1 | 105.1 | 105.1 | 105.1 |
| 400 | 97.0 | 97.0 | 87.1 | 87.1 | 118.9 | 118.9 | 118.9 | 118.9 | 106.7 | 106.7 | 106.7 | 106.7 | 106.0 | 106.0 | 106.0 | 106.0 | 103.6 | 103.6 | 103.6 | 103.6 |
| 500 | 95.6 | 95.6 | 85.5 | 85.5 | 117.3 | 117.3 | 117.3 | 117.3 | 105.3 | 105.3 | 105.3 | 105.3 | 104.3 | 104.3 | 104.3 | 104.3 | 101.9 | 101.9 | 101.9 | 101.9 |
| 630 | 93.9 | 93.9 | 83.8 | 83.8 | 115.6 | 115.6 | 115.6 | 115.6 | 103.8 | 103.8 | 103.8 | 103.8 | 102.5 | 102.5 | 102.5 | 102.5 | 100.1 | 100.1 | 100.1 | 100.1 |
| 800 | 92.4 | 92.4 | 82.2 | 82.2 | 113.8 | 113.8 | 113.8 | 113.8 | 102.3 | 102.3 | 102.3 | 102.3 | 100.4 | 100.4 | 100.4 | 100.4 | 98.0 | 98.0 | 98.0 | 98.0 |
| 1,000 | 90.8 | 90.8 | 80.3 | 80.3 | 111.8 | 111.8 | 111.8 | 111.8 | 100.6 | 100.6 | 100.6 | 100.6 | 98.3 | 98.3 | 98.3 | 98.3 | 95.7 | 95.7 | 95.7 | 95.7 |
| 1,250 | 89.1 | 89.1 | 78.4 | 78.4 | 109.6 | 109.6 | 109.6 | 109.6 | 98.9 | 98.9 | 98.9 | 98.9 | 96.1 | 96.1 | 96.1 | 96.1 | 93.2 | 93.2 | 93.2 | 93.2 |
| 1,500 | 87.4 | 87.4 | 76.7 | 76.7 | 107.2 | 107.2 | 107.2 | 107.2 | 97.0 | 97.0 | 97.0 | 97.0 | 93.7 | 93.7 | 93.7 | 93.7 | 90.4 | 90.4 | 90.4 | 90.4 |
| 2,000 | 85.5 | 85.5 | 74.8 | 74.8 | 104.7 | 104.7 | 104.7 | 104.7 | 95.0 | 95.0 | 95.0 | 95.0 | 91.1 | 91.1 | 91.1 | 91.1 | 87.2 | 87.2 | 87.2 | 87.2 |
| 2,500 | 83.6 | 83.6 | 72.8 | 72.8 | 102.4 | 102.4 | 102.4 | 102.4 | 92.7 | 92.7 | 92.7 | 92.7 | 88.9 | 88.9 | 88.9 | 88.9 | 83.7 | 83.7 | 83.7 | 83.7 |
| 3,150 | 81.5 | 81.5 | 70.7 | 70.7 | 100.0 | 100.0 | 100.0 | 100.0 | 90.3 | 90.3 | 90.3 | 90.3 | 86.4 | 86.4 | 86.4 | 86.4 | 80.2 | 80.2 | 80.2 | 80.2 |
| 4,000 | 79.3 | 79.3 | 68.6 | 68.6 | 98.6 | 98.6 | 98.6 | 98.6 | 87.6 | 87.6 | 87.6 | 87.6 | 83.9 | 83.9 | 83.9 | 83.9 | 76.9 | 76.9 | 76.9 | 76.9 |
| 5,000 | 77.0 | 77.0 | 65.9 | 65.9 | 95.0 | 95.0 | 95.0 | 95.0 | 85.0 | 85.0 | 85.0 | 85.0 | 81.2 | 81.2 | 81.2 | 81.2 | 73.8 | 73.8 | 73.8 | 73.8 |
| 6,300 | 74.5 | 74.5 | 63.1 | 63.1 | 92.3 | 92.3 | 92.3 | 92.3 | 82.3 | 82.3 | 82.3 | 82.3 | 78.6 | 78.6 | 78.6 | 78.6 | 70.5 | 70.5 | 70.5 | 70.5 |
| 8,000 | 71.6 | 71.6 | 60.1 | 60.1 | 89.3 | 89.3 | 89.3 | 89.3 | 79.5 | 79.5 | 79.5 | 79.5 | 75.8 | 75.8 | 75.8 | 75.8 | 67.6 | 67.6 | 67.6 | 67.6 |
| 10,000 | 68.6 | 68.6 | 56.7 | 56.7 | 86.1 | 86.1 | 86.1 | 86.1 | 76.5 | 76.5 | 76.5 | 76.5 | 72.7 | 72.7 | 72.7 | 72.7 | 64.6 | 64.6 | 64.6 | 64.6 |
| 12,500 | 65.3 | 65.3 | 52.8 | 52.8 | 82.5 | 82.5 | 82.5 | 82.5 | 73.2 | 73.2 | 73.2 | 73.2 | 69.5 | 69.5 | 69.5 | 69.5 | 61.3 | 61.3 | 61.3 | 61.3 |
| 16,000 | 61.4 | 61.4 | 47.2 | 47.2 | 78.5 | 78.5 | 78.5 | 78.5 | 69.4 | 69.4 | 69.4 | 69.4 | 65.9 | 65.9 | 65.9 | 65.9 | 57.6 | 57.6 | 57.6 | 57.6 |
| 20,000 | 56.8 | 56.8 | 43.7 | 43.7 | 74.0 | 74.0 | 74.0 | 74.0 | 65.2 | 65.2 | 65.2 | 65.2 | 61.8 | 61.8 | 61.8 | 61.8 | 53.6 | 53.6 | 53.6 | 53.6 |
| 25,000 | 51.6 | 51.6 | 36.7 | 36.7 | 69.4 | 69.4 | 69.4 | 69.4 | 60.4 | 60.4 | 60.4 | 60.4 | 56.8 | 56.8 | 56.8 | 56.8 | 48.5 | 48.5 | 48.5 | 48.5 |

TABLE A-II-8

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | Business Jet Aircraft | | | | | |
|------------------|---|--------------|--------|---|--------------|--------|
| | Gates Learjet 24 & 25 Two CJ610-6 Turbojet Eng. Takeoff 155 Kt Fn = 2500 lbs. | | | Grunman Gulfstream II Two SPEY 511-8 Turbojet Eng. Approach 155 Kt Fn = 3200 lbs. | | |
| | EPNL, dB | | | EPNL, dB | | |
| Distance, ft. | Air to Ground | | Ground | Air to Ground | | Ground |
| | Ground | to Ground | Ground | Ground | to Ground | Ground |
| 200 | 123.3 | 123.3 | 105.0 | 120.3 | 120.3 | 102.8 |
| 250 | 121.9 | 121.9 | 103.8 | 119.2 | 119.2 | 101.6 |
| 315 | 120.4 | 120.4 | 102.6 | 118.1 | 118.1 | 100.3 |
| 400 | 118.9 | 118.9 | 101.2 | 117.0 | 117.0 | 99.0 |
| 500 | 117.3 | 117.3 | 99.8 | 115.9 | 115.7 | 97.6 |
| 630 | 115.6 | 115.6 | 98.3 | 114.7 | 114.5 | 96.1 |
| 800 | 113.8 | 113.7 | 96.8 | 113.5 | 113.1 | 94.5 |
| 1,000 | 111.8 | 111.6 | 95.1 | 112.2 | 111.7 | 92.9 |
| 1,250 | 109.6 | 109.2 | 93.4 | 110.9 | 110.1 | 91.0 |
| 1,600 | 107.2 | 106.7 | 91.5 | 109.3 | 108.1 | 89.2 |
| 2,000 | 104.7 | 103.9 | 89.5 | 107.8 | 106.2 | 87.5 |
| 2,500 | 102.4 | 101.0 | 87.2 | 106.1 | 103.5 | 85.6 |
| 3,150 | 100.0 | 98.0 | 84.8 | 104.3 | 100.6 | 83.6 |
| 4,000 | 97.6 | 94.3 | 82.1 | 102.5 | 97.3 | 81.5 |
| 5,000 | 95.0 | 90.2 | 79.5 | 100.7 | 94.3 | 79.3 |
| 6,300 | 92.3 | 85.7 | 76.8 | 98.5 | 90.5 | 76.9 |
| 8,000 | 89.3 | 81.9 | 74.0 | 96.4 | 86.9 | 74.3 |
| 10,000 | 86.1 | 77.7 | 71.0 | 94.0 | 82.8 | 71.5 |
| 12,500 | 82.5 | 73.2 | 67.7 | 91.5 | 79.1 | 68.3 |
| 16,000 | 78.5 | 68.2 | 63.9 | 88.8 | 74.8 | 64.9 |
| 20,000 | 74.0 | 62.4 | 59.7 | 85.4 | 70.0 | 60.9 |
| 25,000 | 69.4 | 55.4 | 54.9 | 81.8 | 64.5 | 56.2 |

TAELE A-II-9

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | Business Jet Aircraft | | | | | | | | | | | |
|---------------|-----------------------|--|--|--|----------------|--|--|--|----------------|--|--|--|
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| Operation: | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| Airspeed: | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| Distance, ft. | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
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| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
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| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
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| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
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| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
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| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
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| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
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| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
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| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
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| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
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| | Lockheed | | | | North American | | | | North American | | | |
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| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
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| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
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| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
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| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
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| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
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| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
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| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
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| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | Lockheed | | | | North American | | | | North American | | | |
| | Jetstar I/C-140 | | | | Sabre 80 | | | | Sabre 60 | | | |
| | Four PT 12A-6A | | | | Two CF700-2D-2 | | | | Two PT124-8 | | | |
| | Turbojet Eng. | | | | Turbofan Eng. | | | | Turbojet Eng. | | | |
| | Takeoff | | | | Takeoff | | | | Takeoff | | | |
| | 145 Kt | | | | 140 Kt. | | | | 145 Kt. | | | |
| | Fn = 2800 lbs. | | | | Fn = 3450 lbs. | | | | Fn = 2800 lbs. | | | |
| | Power: | | | | Power: | | | | Power: | | | |
| | | | | | | | | | | | | |

TABLE A-II-10

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | Operation: Airspeed: Power: | 4-Engine Turboprop Transport Lockheed Electra, C-130 | | | | 2-Engine Turboprop Transport With Dart Engines F-27 HS-748 | | | | 2-Engine Turboprop Aircraft With PT 6 Engines DHC-6 Twin Otter | | | |
|------------------|-----------------------------------|--|------------------------|------------------|------------------------|--|------------------------|------------------|------------------------|--|------------------------|------------------|------------------------|
| | | Takeoff 170 Kt | Approach 140 Kt | EPNL, dB | | Takeoff 140 Kt | Approach 120 Kt | EPNL, dB | | Takeoff 70 Kt | Approach 65 Kt | EPNL, dB | |
| Distance, ft. | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | |
| | | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground |
| 200 | | 104.5 | 104.5 | 102.2 | 102.2 | 107.4 | 107.4 | 107.4 | 107.7 | 99.7 | 99.7 | 96.3 | 96.3 |
| 250 | | 103.3 | 103.3 | 100.9 | 100.9 | 106.3 | 106.3 | 106.4 | 106.4 | 98.5 | 98.5 | 95.0 | 95.0 |
| 315 | | 102.2 | 102.2 | 99.7 | 99.7 | 105.1 | 105.1 | 105.0 | 105.0 | 97.1 | 97.1 | 93.6 | 93.6 |
| 400 | | 101.0 | 100.9 | 98.3 | 98.3 | 103.9 | 103.9 | 103.5 | 103.4 | 95.7 | 95.7 | 92.1 | 92.1 |
| 500 | | 99.7 | 99.7 | 96.9 | 96.9 | 102.7 | 102.7 | 101.8 | 101.8 | 94.3 | 94.2 | 90.6 | 90.5 |
| 630 | | 98.4 | 98.3 | 95.3 | 95.3 | 101.5 | 101.4 | 100.0 | 99.9 | 92.7 | 92.6 | 89.0 | 88.8 |
| 800 | | 97.1 | 96.9 | 93.7 | 93.5 | 100.2 | 100.0 | 98.0 | 97.8 | 91.1 | 90.8 | 87.2 | 87.0 |
| 1,000 | | 95.7 | 95.4 | 91.8 | 91.5 | 98.8 | 98.4 | 95.8 | 95.6 | 89.4 | 88.9 | 85.2 | 85.0 |
| 1,250 | | 94.2 | 93.7 | 89.9 | 89.4 | 97.4 | 96.7 | 93.5 | 93.0 | 87.7 | 86.7 | 83.1 | 82.7 |
| 1,600 | | 92.7 | 91.9 | 87.9 | 87.6 | 96.0 | 94.9 | 90.8 | 90.1 | 85.9 | 84.3 | 80.8 | 80.7 |
| 2,000 | | 91.1 | 89.4 | 85.8 | 85.2 | 94.5 | 92.9 | 87.9 | 86.7 | 84.0 | 81.6 | 78.2 | 77.4 |
| 2,500 | | 89.4 | 86.2 | 83.5 | 82.5 | 92.9 | 90.0 | 84.7 | 82.9 | 82.1 | 78.7 | 75.4 | 74.3 |
| 3,150 | | 87.4 | 82.8 | 81.3 | 79.4 | 91.2 | 86.7 | 81.6 | 77.7 | 79.9 | 75.3 | 72.5 | 70.8 |
| 4,000 | | 85.3 | 78.4 | 79.1 | 75.5 | 89.4 | 82.7 | 79.0 | 73.6 | 77.8 | 71.6 | 69.2 | 66.9 |
| 5,000 | | 83.1 | 74.7 | 76.8 | 71.5 | 87.5 | 78.4 | 76.5 | 69.1 | 75.5 | 67.3 | 65.4 | 62.0 |
| 6,300 | | 80.9 | 70.7 | 74.4 | 67.3 | 85.4 | 73.8 | 73.9 | 64.2 | 73.1 | 62.8 | 60.9 | 55.7 |
| 8,000 | | 78.5 | 67.4 | 71.8 | 63.9 | 83.2 | 71.2 | 71.1 | 59.2 | 70.5 | 56.6 | 57.1 | 49.0 |
| 10,000 | | 76.1 | 63.6 | 69.0 | 60.1 | 80.8 | 68.2 | 68.5 | 53.9 | 67.7 | 50.9 | 53.0 | 41.6 |
| 12,500 | | 73.5 | 59.6 | 66.0 | 56.5 | 78.1 | 64.8 | 65.7 | 46.8 | 64.7 | 43.8 | 48.0 | 30.5 |
| 16,000 | | 70.8 | 54.5 | 62.5 | 50.4 | 75.2 | 61.1 | 62.6 | 39.5 | 60.6 | 33.4 | 41.5 | |
| 20,000 | | 67.9 | 48.8 | 58.6 | 42.1 | 71.8 | 56.6 | 59.3 | 26.6 | 56.1 | | 34.6 | |
| 25,000 | | 64.7 | 41.6 | 54.4 | 31.6 | 66.9 | 49.0 | 52.6 | | 50.9 | | 26.2 | |

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | 4-Engine Pistol Transport | | | | 2-Engine Pistol Transport ($>12,500$ lbs. Max. Gross Wt.) | | | |
|------------------|---------------------------|------------------------|---------------------|------------------------|---|------------------------|---------------------|------------------------|
| | Takeoff 140 Kt. | | Approach 120 Kt. | | Takeoff 140 Kt. | | Approach 120 Kt. | |
| | EPNL, dB | | EPNL, dB | | EPNL, dB | | EPNL, dB | |
| Distance, ft. | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground | Air to Ground | Ground to Ground |
| 200 | 111.7 | 111.7 | 101.7 | 101.7 | 108.7 | 108.7 | 98.7 | 98.7 |
| 250 | 110.6 | 110.6 | 100.5 | 100.5 | 107.6 | 107.6 | 97.5 | 97.5 |
| 315 | 109.4 | 109.4 | 99.3 | 99.3 | 106.4 | 106.4 | 96.3 | 96.3 |
| 400 | 108.2 | 108.2 | 98.0 | 98.0 | 105.2 | 105.2 | 95.0 | 95.0 |
| 500 | 107.0 | 106.9 | 96.8 | 96.7 | 104.0 | 103.9 | 93.8 | 93.7 |
| 630 | 105.7 | 105.4 | 95.4 | 95.3 | 102.7 | 102.4 | 92.4 | 92.3 |
| 800 | 104.4 | 104.0 | 94.0 | 93.7 | 101.4 | 101.0 | 91.0 | 90.7 |
| 1,000 | 103.0 | 102.4 | 92.5 | 92.0 | 100.0 | 99.4 | 89.5 | 89.0 |
| 1,250 | 101.5 | 100.5 | 90.9 | 90.1 | 98.5 | 97.5 | 87.9 | 87.1 |
| 1,600 | 100.0 | 98.6 | 89.3 | 88.0 | 97.0 | 95.6 | 86.3 | 85.0 |
| 2,000 | 98.4 | 96.4 | 87.5 | 85.8 | 95.4 | 93.4 | 84.6 | 82.8 |
| 2,500 | 96.7 | 93.5 | 85.8 | 82.9 | 93.7 | 90.5 | 82.8 | 79.9 |
| 3,150 | 95.0 | 90.4 | 84.0 | 79.8 | 92.0 | 87.4 | 81.0 | 76.8 |
| 4,000 | 93.1 | 86.8 | 82.0 | 76.3 | 90.1 | 83.8 | 79.0 | 73.3 |
| 5,000 | 91.2 | 83.3 | 80.0 | 72.5 | 88.2 | 80.3 | 77.0 | 69.5 |
| 6,300 | 89.1 | 79.8 | 77.3 | 68.8 | 86.1 | 76.8 | 74.8 | 65.8 |
| 8,000 | 86.8 | 76.3 | 75.5 | 65.0 | 83.8 | 73.3 | 72.5 | 62.0 |
| 10,000 | 84.5 | 72.9 | 72.9 | 61.3 | 81.5 | 69.9 | 69.9 | 58.3 |
| 12,500 | 81.9 | 69.3 | 70.2 | 57.1 | 78.9 | 66.3 | 67.2 | 54.1 |
| 16,000 | 79.2 | 64.9 | 67.3 | 52.0 | 76.2 | 61.9 | 64.3 | 49.0 |
| 20,000 | 76.2 | 60.4 | 63.7 | 44.6 | 73.2 | 57.4 | 60.7 | 41.6 |
| 25,000 | 72.9 | 54.4 | 59.6 | 35.2 | 69.9 | 51.4 | 56.6 | 32.2 |

TABLE A-II-12

TABULATION OF EPNL VALUES FOR DIFFERENT AIRCRAFT

| Aircraft: | Operation: Airspeed: Power: | 2-Engine Piston Aircraft ($<12,500$ lbs. Max. Gross Wt.) | | | 1-Engine Piston Aircraft (180 hp or less) | | |
|------------------|-----------------------------------|---|------------------------|----------|---|------------------------|----------|
| | | Takeoff 110 Kt. | Approach 90 Kt. | EPNL, dB | Takeoff 110 Kt. | Approach 90 Kt. | EPNL, dB |
| | | Air to Ground | Ground to Ground | | Air to Ground | Ground to Ground | |
| Distance, ft. | | | | | | | |
| 200 | | 97.6 | 97.6 | 92.2 | 94.6 | 94.6 | 89.2 |
| 250 | | 96.5 | 96.5 | 91.0 | 93.5 | 93.5 | 88.0 |
| 315 | | 95.3 | 95.3 | 89.8 | 92.3 | 92.3 | 86.8 |
| 400 | | 94.2 | 94.2 | 88.5 | 91.2 | 91.2 | 85.5 |
| 500 | | 93.0 | 92.8 | 87.2 | 90.0 | 89.8 | 84.2 |
| 630 | | 91.7 | 91.3 | 85.8 | 88.7 | 88.3 | 82.2 |
| 600 | | 90.4 | 89.9 | 84.3 | 87.4 | 86.9 | 81.3 |
| 1,000 | | 89.1 | 88.3 | 82.8 | 86.1 | 85.3 | 79.8 |
| 1,250 | | 87.7 | 86.5 | 81.2 | 84.7 | 83.5 | 78.2 |
| 1,600 | | 86.2 | 84.6 | 79.5 | 83.2 | 81.6 | 76.5 |
| 2,000 | | 84.6 | 82.3 | 77.7 | 81.6 | 79.3 | 74.7 |
| 2,500 | | 83.0 | 79.6 | 75.9 | 80.0 | 76.6 | 72.9 |
| 3,150 | | 81.2 | 76.3 | 73.6 | 78.2 | 73.3 | 70.6 |
| 4,000 | | 79.4 | 73.0 | 71.3 | 76.4 | 70.0 | 68.3 |
| 5,000 | | 77.4 | 69.5 | 68.8 | 74.4 | 66.5 | 65.8 |
| 6,300 | | 75.4 | 65.9 | 66.3 | 72.4 | 62.9 | 63.3 |
| 8,000 | | 73.2 | 62.1 | 63.7 | 70.2 | 59.1 | 60.7 |
| 10,000 | | 70.8 | 58.1 | 61.0 | 67.8 | 55.1 | 58.0 |
| 12,500 | | 68.2 | 53.8 | 57.8 | 65.2 | 50.8 | 54.8 |
| 16,000 | | 65.5 | 49.0 | 54.1 | 62.5 | 46.0 | 51.1 |
| 20,000 | | 62.5 | 42.6 | 50.2 | 59.5 | 39.6 | 47.2 |
| 25,000 | | 58.6 | 32.5 | 45.5 | 55.6 | 29.5 | 42.5 |

Source, Tables A-II-1 through A-II-12: Effective Perceived Noise Levels versus Distance Curves for Civil Aircraft, Bolt, Beranek, and Newman for the EPA.

1390.2

CHART: EXTERNAL NOISE EXPOSURE STANDARDS FOR NEW CONSTRUCTION SITES (Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries)

| GENERAL EXTERNAL EXPOSURES dB(A) | AIRPORT ENVIRONS | |
|---|---------------------------|--------------------------|
| | CNR ZONE */ | NEF ZONE */ |
| UNACCEPTABLE | | |
| Exceeds 80 dB(A) 60 minutes per 24 hours | 3 | C |
| Exceeds 75 dB(A) 8 hours per 24 hours | Greater than CNR 115 | Greater than NEF 40 |
| (Exceptions are strongly discouraged and require a 102(2)C environmental statement and the Secretary's approval) | | |
| DISCRETIONARY -- NORMALLY UNACCEPTABLE | | |
| Exceeds 65 dB(A) 8 hours per 24 hours | 2 | B |
| Loud repetitive sounds on site | 100 - 115 | 30 - 40 |
| (Approvals require noise attenuation measures, the Regional Administrator's concurrence and a 102(2)C environmental statement) | | |
| DISCRETIONARY -- NORMALLY ACCEPTABLE | | |
| Does not exceed 65 dB(A) more than 8 hours per 24 hours | | |
| ACCEPTABLE | | |
| Does not exceed 45 dB(A) more than 30 minutes per 24 hours | 1 Less than CNR 100 | A Less than NEF 30 |

*/ See Appendix 2 for explanations of Composite Noise Rating (CNR) and Noise Exposure Forecast (NEF).

Land Uses Adjacent to Airports and the Relationship to NEF Contours

Noise Exposure Forecast (NEF) Values

Remarks

20-30

Few activities will be affected by aircraft sounds, although building designs for especially sound-sensitive activities, such as auditoriums, churches, schools, hospitals, and theatres should consider sound control in areas close to the airport. Detailed studies by qualified personnel are recommended for outdoor amphitheatres and similar places of public assembly in the general vicinity of the airport.

30-40

Activities where uninterrupted communication is essential should consider sound exposure in design. Generally, residential development is not considered a suitable use, although multi-family developments where sound control features have been incorporated in building design might be considered. Open-air activities and outdoor living will be affected by aircraft sound. The construction of auditoriums, schools, churches, hospitals, theatres, and similar activities should be avoided within this zone where possible.

>40

Land should be reserved for activities that can tolerate a high level of sound exposure, such as some agricultural, industrial, and commercial uses. No residential developments of any type are recommended. Sound-sensitive activities such as schools, offices, hospitals, churches, and similar activities should not be constructed in this area unless no alternative location is possible. All regularly occupied structures should consider sound control in design.

Source: *Airport Master Plans*, Federal Aviation Administration AC150/5070-6 (Washington, D. C.: Government Printing Office, 1971), Table 3, p. 47.

**YEARLY AVERAGE* EQUIVALENT SOUND LEVELS IDENTIFIED AS
REQUISITE TO PROTECT THE PUBLIC HEALTH AND WELFARE WITH
AN ADEQUATE MARGIN OF SAFETY**

| | Measure | Indoor Activity Inter- ference | Hearing Loss Considera- tion | To Protect Against Both Ef- fects (b) | Outdoor Activity Inter- ference | Hearing Loss Considera- tion | To Protect Against Both Ef- fects (b) |
|--|-----------------|---|------------------------------------|--|--|------------------------------------|--|
| Residential with Out- side Space and Farm Residences | L_{dn} | 45 | | 45 | 55 | | 55 |
| | $L_{eq}(24)$ | | 70 | | | 70 | |
| Residential with No Outside Space | L_{dn} | 45 | | 45 | | | |
| | $L_{eq}(24)$ | | 70 | | | | |
| Commercial | $L_{eq}(24)$ | (a) | 70 | 70(c) | (a) | 70 | 70(c) |
| Inside Transportation | $L_{eq}(24)$ | (a) | 70 | (a) | | | |
| Industrial | $L_{eq}(24)(d)$ | (a) | 70 | 70(c) | (a) | 70 | 70(c) |
| Hospitals | L_{dn} | 45 | | 45 | 55 | | 55 |
| | $L_{eq}(24)$ | | 70 | | | 70 | |
| Educational | $L_{eq}(24)$ | 45 | | 45 | 55 | | 55 |
| | $L_{eq}(24)(d)$ | | 70 | | | 70 | |
| Recreational Areas | $L_{eq}(24)$ | (a) | 70 | 70(c) | (a) | 70 | 70(c) |
| Farm Land and General Unpopulated Land | $L_{eq}(24)$ | | | | (a) | 70 | 70(c) |

Code:

- a. Since different types of activities appear to be associated with different levels, identification of a maximum level for activity interference may be difficult except in those circumstances where speech communication is a critical activity. (See Figure D-2 for noise levels as a function of distance which allow satisfactory communication.)
- b. Based on lowest level.
- c. Based only on hearing loss.
- d. An $L_{eq}(8)$ of 75 dB may be identified in these situations so long as the exposure over the remaining 16 hours per day is low enough to result in a negligible contribution to the 24-hour average, i.e., no greater than an L_{eq} of 60 dB.

Note: Explanation of identified level for hearing loss: The exposure period which results in hearing loss at the identified level is a period of 46 years.

*Refers to energy rather than arithmetic averages.

Source: *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, U. S. Environmental Protection Agency, March, 1974.

Design Noise Level/Land Use Relationships

| <u>Land Use Category</u> | <u>Design Noise Level - L10</u> | <u>Description of Land Use Category</u> |
|--------------------------|---------------------------------|--|
| A | 60 dBA (Exterior) | Tracts of lands in which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. For example, such areas could include amphitheaters, particular parks or portions of parks, or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. |
| B | 70 dBA (Exterior) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreation areas, playgrounds, active sports areas, and parks. |
| C | 75 dBA (Exterior) | Developed lands, properties or activities not included in categories A and B above. |
| D | Unlimited | Undeveloped lands. |
| E | 55 dBA (Interior) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums. |

(Table is taken from the Federal Highway Administration's
Policy and Procedure Memorandum 90-2)

**DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA**



AVIATION NOISE ABATEMENT POLICY

November 18, 1976

OFFICE OF THE SECRETARY

FEDERAL AVIATION ADMINISTRATION

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PART ONE

INTRODUCTION AND SUMMARY OF AVIATION NOISE ABATEMENT POLICY

I. INTRODUCTION

Aircraft noise is a significant annoyance for six to seven million Americans. The annoyance is particularly serious at many of our major airports, including those in large metropolitan areas from coast to coast. But noise constitutes a present or potential problem for residents living near many other airports across the nation, and as air travel increases it will become a serious problem at some of these other airports as well.

The aircraft noise issue became increasingly apparent in the early 1960's with the advent of jet aircraft and was soon magnified by the rapidly increasing number of commercial operations in the latter part of the decade. Because of its adverse effect on people, aircraft noise was recognized as a major constraint on the further development of the commercial aviation network, threatening to limit the construction and expansion of airports and access to them. Joint action by government and the private sector was taken to address it. The engine manufacturers and the federal government both engaged in extensive research into quieting jet engines. In 1969, Congress gave the Federal Aviation Administration ("FAA") the responsibility to regulate aircraft design and equipment for noise reduction purposes. The FAA then embarked upon a long-term program of controlling aircraft noise at its source.

A regulation promulgated in 1969 established noise standards for turbojet aircraft of new design effective December 1, 1969; an amendment in 1973 extended the same standards to all new aircraft of older design. The third step in the source noise control program is a regulation requiring compliance with noise standards by jet aircraft already in the fleet. Initially called the "retrofit" rule, it has been the subject of two major FAA rulemaking proposals, a notice of proposed rulemaking published in 1974 and a similar Environmental Protection Agency (EPA) proposal published in 1975. The FAA noise proposal for operating aircraft was the product of considerable study and analysis and was submitted by the Federal Aviation Administrator to the Secretary of Transportation in January because consultation with the Secretary is required by the Noise Control Act of 1972, and because the FAA concluded that some form of federal financing might be required to complete that program.

Intensive review of various proposals by the Secretary of Transportation, with the support of the FAA Administrator, led to a far-ranging analysis of the aircraft noise problem, alternative methods of dealing with it, and the economic consequences of imposing a rule applicable to operating aircraft as well as to newly certificated aircraft.

On October 21, 1976, President Ford advised us that, after considering the proposal we jointly presented to him, and the views of other interested agencies, including EPA, he had accepted our recommendation that action should be taken to extend current noise standards to domestic U.S. commercial airplanes in not more than eight years. He directed that the FAA promulgate its noise compliance rule not later than January 1, 1977. Our statement today announces that action, and the companion measures we believe are an integral part of a comprehensive aviation noise abatement policy.

The scope of the noise problem, the interrelationship and special responsibilities of the many parties concerned with it, and the general confusion and prevalent uncertainty about what it is possible to achieve and who is responsible have led us to conclude that the federal government should address the overall noise problem with a more comprehensive approach than mere promulgation of a new regulation. From recognition of the need for a comprehensive response to the noise problem, this policy statement will analyze the aviation noise problem, and delineate the shared responsibilities of those who must act to alleviate it - industry, government and private citizens.

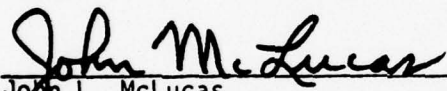
Although progress has been made in the development of quieter aircraft, much remains to be accomplished. Aircraft noise, of course, cannot be completely eliminated unless we go back to the glider; its adverse effect on people can only be reduced. The complex division of legal authority and practical responsibility among airport proprietors, federal and local government agencies, air carriers, and manufacturers calls for a clearer understanding, first, of what is technologically and financially attainable and, second, of how each of these parties can and must perform those functions for which it is uniquely suited. Only if each party assumes responsibility and acts on the basis of complete cooperation and coordination will we achieve significant and measured progress in reducing the impact of aircraft noise on airport neighbors.

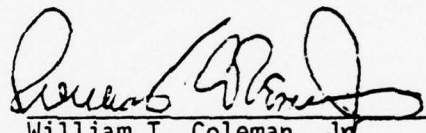
As the federal officials principally concerned with aviation noise, it is our duty to provide leadership in a national effort to reduce aircraft noise. The aviation noise abatement policy that follows represents our views about what action should be taken. Within the constraints of technology, productivity, and financing, it clarifies the responsibility of the federal government to reduce aircraft noise at its source, to promote safe operational procedures that abate the impact of noise on populated areas and to promote positive efforts to attain compatible land use in areas adjacent to airports. It deals realistically with the time that will be required to bring the current fleet of aircraft into compliance with noise level standards that are now technologically feasible and with the financial requirements necessary to make compliance possible.

Those who anticipate a complete federal solution to the aircraft noise problem misunderstand the need for federal, local and private interaction. The primary obligation to address the airport noise problem always has been and remains a local responsibility. Consequently, we have also set forth what we believe to be the legal and proper responsibilities of the airport proprietors, air carriers and other aircraft operators, aeronautical manufacturers, state and local governments, and private citizens. The full benefit of a federal plan of action will be realized only if complementary action is taken by all these participants.

Local capability to plan and take action will be enhanced by a clearer understanding of what the federal government intends to do. As the federal government reduces cumulative noise exposure by controlling the source of noise, so must local governments and airport proprietors, with federal financial assistance in some instances, acquire land and assure compatible land use in areas surrounding the airport in order to confine severe noise exposure within the boundaries of the airport and to minimize the impact of noise beyond those boundaries.

Because of the complexity of the noise problem, we have set forth the following synopsis of our Aviation Noise Abatement Policy which summarizes the key responsibilities of each participant and highlights the federal action program. The analysis of the noise and financing problems that led to the formulation of this policy, the legal foundation upon which the policy rests, and the specific explanation of how certain timing, noise levels and policy conclusions were reached are set forth in Part Two. Accordingly, we invite your attention to Part Two and the underlying rationale that we believe will clarify and support the conclusions set forth in the following section.


John L. McLucas
The Federal Aviation Administrator


William T. Coleman, Jr.
The Secretary of Transportation

II. AVIATION NOISE ABATEMENT POLICY

A. Basic Policy Principles

- . Because aircraft noise adversely affects a significant portion of the nation's population, a nationwide commitment, involving federal, local and private resources, is required to reduce the impact of aviation noise on the people who live in areas surrounding airports.
- . Public understanding is essential to an effective program to reduce aircraft noise so that we do not raise the expectations of airport neighbors for noise reductions beyond the levels which technology and reasonable cost-effectiveness make possible.
- . Each of the participants in the noise abatement effort - the airport users, aircraft manufacturers, the airport proprietors, federal, state and local governments, and residents in communities surrounding airports - must take specific steps that are essential in reducing the number of people adversely affected by noise and the severity of the effect on all people.
- . Planning and acting in coordination, each of these parties should move toward the goal of confining severe aircraft noise exposure levels around U.S. airports to the areas included within the airport boundary or over which the airport has a legal interest, and of reducing substantially the number and extent of areas receiving noise exposure levels that interfere with human activity.

B. Authorities and Responsibilities Under the Policy

The Federal Government has the authority and responsibility to control aircraft noise by the regulation of source emissions, by flight operational procedures, and by management of the air traffic control system and navigable airspace in ways that minimize noise impact on residential areas, consistent with the highest standards of safety. The federal government also provides financial and technical assistance to airport proprietors for noise reduction planning and abatement activities and, working with the private sector, conducts continuing research into noise abatement technology.

- . Airport Proprietors are primarily responsible for planning and implementing action designed to reduce the effect of noise on residents of the surrounding area. Such actions include optimal site location, improvements in airport design, noise abatement ground procedures, land acquisition, and restrictions on airport use that do not unjustly discriminate against any user, impede the federal interest in safety and management of the air navigation system, or unreasonably interfere with interstate or foreign commerce.

State and Local Governments and Planning Agencies must provide for land use planning and development, zoning, and housing regulation that will limit the uses of land near airports to purposes compatible with airport operations.

The Air Carriers are responsible for retirement, replacement, or retrofit of older jets that do not meet federal noise level standards, and for scheduling and flying airplanes in a way that minimizes the impact of noise on people.

Air Travelers and Shippers generally should bear the cost of noise reduction, consistent with established federal economic and environmental policy that the adverse environmental consequences of a service or product should be reflected in its price.

Residents and Prospective Residents in areas surrounding airports should seek to understand the noise problem and what steps can be taken to minimize its effect on people. Individual and community responses to aircraft noise differ substantially and, for some individuals, a reduced level of noise may not eliminate the annoyance or irritation. Prospective residents of areas impacted by airport noise thus should be aware of the effect of noise on their quality of life and act accordingly.

C. Federal Action Plan to Implement These Policies.

1. Aircraft Source Noise Regulation

a. Currently Operating Aircraft

The Federal Aviation Administration will promulgate a rule requiring that subsonic jet airplanes with maximum weight in excess of 75,000 pounds that do not meet the present Federal Aviation Regulations Part 36 noise levels must be retired from the fleet or modified ("retrofitted") to meet those levels in accordance with the following schedule. To bring about the earliest reduction of noise levels possible, the phased-in compliance deadlines for each aircraft type have been established on the basis of what is technologically practicable and economically reasonable. The deadlines are:

747s within six years, with one-half to be completed within four years;

727s, 737s, DC-9, BAC 1-11s within six years, with one-half to be completed within four years; and

720s, 707s, DC-8s, CV-990s within eight years, with one-quarter to be completed within four years, and one-half to be completed within six years.*

These time periods will start to run with the issuance of appropriate regulations to be effective January 1, 1977. In accordance with such procedures as are authorized by law and FAA regulations, persons subject to these regulations may petition for an exemption. In evaluating petitions for an exemption, the FAA will consider the economic ability of the petitioner to meet the regulatory timetable and whether the petitioner is able to operate the airplanes for which an exemption is sought into airports where a significant noise problem does not exist. As a matter of policy, it is our view that such exemptions should not in any event extend to more than one-third of the JT8D powered airplanes in an operator's fleet.

In conjunction with the issuance of the Part 36 compliance regulation, the United States will work through the International Civil Aviation Organization to reach agreement with other nations on means to abate aircraft noise. If agreement is not reached in three years, it is the intention of the federal government to require aircraft flown by carriers of other countries to meet U.S. established noise levels at the end of five additional years. For the time being, aircraft operated by foreign carriers and that portion of the fleets of U.S. air carriers used in international service will not be covered by the noise regulations issued pursuant to this statement.

b. Future Design Aircraft

The FAA will complete, by March 1, 1977, its consideration of new, more stringent noise standards for new aircraft designs that reflect recent advances in noise suppression technology and are technologically practicable, economically reasonable, and appropriate for the particular type of aircraft. These regulations will be applicable to subsonic aircraft developed for the replacement of the old four-engine jets and to airplanes type certificated after the effective date of the regulation.

* In the establishment of the eight year deadline for the older four-engine jets, we considered, for example, the time required to develop and certify for production a retrofit kit for the 707 (two years) and the DC-8 (36 months) and the time required to produce and install enough kits to bring these planes into compliance (there are currently over 500 in operation).

c. Supersonic Aircraft

Using information that is now available on a continuing basis from the Concorde demonstration, the FAA, not later than thirty days after the conclusion of the sixteen month demonstration periods, will act to promulgate a noise rule applicable to supersonic aircraft that is necessary to protect the public health and welfare and that is consistent with the statutory requirement that the Administrator consider technological practicability, economic reasonableness, and appropriateness to aircraft type.

2. Operating Procedures

The FAA has evaluated a number of concepts for aircraft operating procedures designed to abate noise. The FAA has taken regulatory action this week to maximize the noise reduction benefits of new aircraft and retrofitted aircraft, consistent with the highest degree of safety. Additional analysis and evaluation is underway which is expected to lead to future regulatory action.

3. Airport Development Aid Program

Under the new authority granted in the 1976 Amendments to the Airport and Airway Development Act, the FAA will establish a high priority for the allocation of discretionary Airport and Airway Trust Funds for airport land acquisition to ensure compatible use of land near airports, the purchase of noise suppressant equipment, the construction of physical barriers and other noise reduction activities.

The Department of Transportation, in appropriate cases, will encourage the development of new airports to replace some of the older airports in areas with large populations adversely affected by noise. In the development of new airports, federal financing will be conditioned on effective noise abatement planning. Federal funding for new airport development and for airport expansion and improvement will require documentation that the proprietor is taking all reasonable steps to ensure that the use of land areas exposed to serious levels of noise is restricted to uses compatible with airport operations projected for the foreseeable future.

The Administration will request the Congress to amend further the Airport and Airway Development Act to include among airport proprietor activities eligible for federal-aid funding the acquisition, installation and operation of airport noise monitoring equipment. Use of such equipment is vital to

assist airport proprietors in quantifying noise exposure, identifying specific airplanes and operators that are major contributors to community noise, and developing programs to reduce aircraft noise exposure.

4. Airport Noise Policy

To bring about further relief from excessive aircraft noise, airport proprietors are encouraged to develop aggressive noise abatement programs for their airports. The FAA will assist proprietors in attaining their noise abatement goals and will advise them on how their proposed plans affect the overall air transportation system. The FAA will accept preliminary proposals from airport sponsors for comprehensive noise abatement plans and will fund a select number of innovative noise abatement model plans and demonstrations. In addition, the FAA will encourage noise abatement plans from airport proprietors in conjunction with both applications for major airport development grants and proposals to establish use restrictions, such as curfews or scheduling and equipment restrictions. The FAA will advise airport operators whether proposed use restrictions are unjustly discriminatory or place an undue burden on interstate or foreign commerce because of their impact on the national air transportation system. Where necessary, the FAA will seek adjudication of the constitutional issues involved if it believes that a use restriction established at an airport is unjustly discriminatory or creates an undue burden on interstate or foreign air commerce.

D. Air Carrier Action Plan

1. Aircraft Compliance

Under the federal rule described above, the older, noisier four-engine jets using the JT3D and similar engines (707s, DC-8s, CV-990s) must be modified to meet Part 36 noise levels or they must be retired from operation within eight years. Many of the four-engine jets are old and relatively inefficient to operate. After weighing the advantages of modification and replacement, the Secretary of Transportation and the Administrator of the Federal Aviation Administration have concluded that it would be in the public interest if most of these aircraft were replaced by new airplanes, particularly by new airplanes that incorporate new technologies currently under development. Replacement would reduce further noise and pollution emissions levels. In addition, replacement would increase energy efficiency, accelerate introduction of advanced safety and design technologies, increase employment opportunities, improve service for the air traveller, and improve prospects for exports by the American aerospace industry.

2. Financing

To ensure that the air carriers can meet the new aircraft noise standards within the deadlines established by regulation, President Ford directed me, as Secretary of Transportation, to hold a public hearing on December 1, 1976, to determine whether any additional financing arrangements may be necessary. Further details on this hearing and the issues to be addressed are set forth in separate documentation.

E. Local Actions

While federal action will form the basis of our program, substantial local action will be necessary to complement the noise reduction actions of the federal government and air carriers. Since a federal program would be significantly less effective without commensurate local actions, we have delineated those actions we believe local authorities should take.

The FAA will encourage airport proprietors, who are legally responsible for the effect of aircraft noise on the surrounding community, to assess their particular noise problem and, where local authorities determine that there is a significant problem, to develop an action plan to reduce the impact of noise. That action plan should include a program to ensure maximum land use compatibility with airport operations both by the acquisition of easements or other rights in the use of land or airspace and by encouraging local governments to adopt and enforce zoning or other land use controls. It should also address other actions that may be taken, such as the establishment of a formal noise abatement runway system, control of ground operations, and preferential arrival and departure routes. The proprietor may wish to propose to the FAA special landing and takeoff procedures to deal with any unique conditions around his airport.

In addition, state and local governments with jurisdiction over property adjacent to airports must take action of their own, preferably in cooperation with the local airport proprietor. State and local governments are directly and uniquely responsible for ensuring that land use planning and zoning and land development activities in areas surrounding airports are consistent with the objective of ensuring land use that is compatible with present and projected aircraft noise exposure in the area. Construction standards for new buildings should ensure appropriate insulation from aircraft noise, and programs to insulate existing public and residential buildings should be advanced where needed.

State and local governments also should require that appropriate notice of airport noise exposure be provided to the purchasers of real estate and to prospective residents in areas near airports to ensure awareness of the nature of the airport environs.

F. Concluding Note

With realistic public appreciation for the complexity of the task to be performed and with full and open communication and cooperation among the participants, the actions that each of us take separately pursuant to this policy will contribute toward significant and reocognizable progress in the reduction of the adverse effect of aircraft noise on airport neighbors.

PART TWO

ANALYSIS OF THE NOISE PROBLEM, LEGAL FRAMEWORK,
AND DESCRIPTION OF THE FEDERAL ACTION PROGRAM

I. STATEMENT OF THE PROBLEM

In determining what action can and should be taken at the federal and local levels and in the private sector to reduce the adverse effect of excessive aircraft noise, a full understanding of this multidimensional problem is essential. In this part, we will explain the underlying rationale that supports the conclusions set forth in our Aviation Noise Abatement Policy and the federal action program to implement it. In describing the noise problem, we will explain first the technical framework for measuring the noise problem, how it affects people and how they react to it, how many people are subjected to excessive noise and where they live, and how actions to reduce noise affect interstate commerce. Because progress in noise reduction is heavily dependent upon the financial ability of airlines to modify or replace their old, noisy airplanes and on the ability of manufacturers to design, produce, and sell less noisy airplanes, we also will consider the financial condition of the airlines and the impact of proposed actions on the aerospace industry.

The responsibilities of federal and local governments, airport proprietors, and industry in responding to the noise problem are defined in large measure by statutory and case law. Accordingly, the legal framework set forth in this part establishes the foundation upon which the federal program must be constructed. Finally, the federal response summarized in this policy is described in greater detail in terms of the precise nature of the noise problem it is designed to address and the financial and technological constraints within which progress must be made.

A. The Noise Problem

1. How Noise is Described

People's reactions to noise differ widely. It is difficult, therefore, to derive a simple mathematical formula that accurately represents human reaction to noise annoyance. For example, it remains uncertain whether people, in reacting to aircraft noise, are more annoyed by the number of aircraft noise events or the noise levels of individual events. To help measure, quantify and understand the effects of noise on people, there has been a proliferation of approaches, the acronyms of which threaten to challenge the supremacy of the federal bureaucracy in this regard. Rational public discourse is not greatly aided by a debate over the relative merits of expressing noise impact in terms of dB, dBA, dBD, PNL, EPNL, EPNdB, SEL, SENEL, CNR, NEF, CNEL, ASDS, Ldn, and Leq. In this policy statement, we have relied primarily on the two most common measurements of noise: noise generated by a single event (expressed in EPNdB, usually at the Part 36 measuring points) and cumulative noise exposure (expressed in Noise Exposure Forecast or NEF).

Human response to single-event jet aircraft noise is best represented in terms of Effective Perceived Noise Level, expressed in units of EPNdB. This unit of perceived noise takes into account the actual sound energy received by a listener, the ear's response to that sound energy, the added annoyance of any pure tones or "screeches" in the noise, and the duration of the noise. In any discussion of aircraft noise abatement, a key consideration is the difference in noise level which a listener is able to perceive and find meaningful, in terms of both the single event and the cumulative exposure. Few humans can detect differences between single events of aircraft noise of less than about 5 EPNdB. However, an increase of 10 EPNdB is usually perceived as a doubling in loudness.

The Part 36 measuring points are standardized locations from which aircraft noise is measured for certification purposes. Such measurements are specified at three points: one under the approach path,* one under the takeoff path,** and one to the side of the runway at the point of maximum noise during takeoff.*** Although the Part 36 values do not give a complete picture of the total noise impact at an airport, they do provide a standardized method of measuring aircraft noise, and are useful in comparing noise levels of different aircraft.

In general, if noise events, such as aircraft flyovers, are infrequent, the peak noise level of the individual events will probably determine individual reactions to that noise. If the noise events are relatively continuous or repetitive, however, the total noise "dose" or cumulative noise exposure becomes a more important factor in people's reactions to aircraft noise. Noise Exposure Forecast (NEF) provides a measure of the total aircraft-generated noise energy received at locations near an airport during a typical 24-hour period. The NEF value at a given point near an airport is calculated by summing the noise energy received at that point from all of the aircraft operating into and out of that airport during a day, with an added penalty for nighttime noise (flights after 10 p.m.). Points of equal NEF value are then joined to form contours of equal noise exposure. Calculation of these values requires knowledge of the number and type of aircraft operating, the noise characteristics of each aircraft, the flight paths they follow, the time of day they fly, and the manner in which they are operated (for example, power settings during takeoff and landing).

* One nautical mile from the runway threshold.

** 3.5 nautical miles from the start of the takeoff roll.

*** 0.35 nautical miles to the side of the runway for four-engine aircraft, 0.25 nautical miles for two- and three-engine aircraft.

The NEF procedure has been developed over the last decade for land use planning around airports as the number of jet aircraft has increased and their noise has become more of an annoyance. It is particularly meaningful in measuring the overall impact that residents around busy airports might experience, and research into human reaction to aircraft noise indicates that cumulative noise exposure is the most useful measure of public reaction to aircraft noise.*

*References for Cumulative Measure Support

1. Tracor Inc.: Community Reaction to Airport Noise - Vol. I, NASA CR 1761, Vol. II NASA CR 111 316, September 1970.
2. Connor, William and Patterson, Harrold: Community Reaction to Aircraft Noise Around Smaller City Airports. NAS CR 2104, 1972.
3. Galloway, W. and Bishop, D.E.: Noise Exposure Forecasts: Evolution, Evaluation, Extensions and Land Use Interpretations. FAA Report No. FAA-NO-70-9, August 1970.
4. McKennell, A.C.: Aircraft Noise Annoyance Around London (Heathrow) Airport. S.S. 337, Central Office of Information, 1963.
5. MIL Research Ltd.: Second Survey of Aircraft Noise Annoyance Around London (Heathrow) Airport. Office of Population Censuses and Surveys, Social Surveys Division. HMSO (London), 1971.

In assessing community reaction to aircraft noise exposure, the following interpretations of NEF values are often used:

| | |
|---------------------|--|
| Less than NEF 30 | Essentially no complaints expected; noise may interfere with community activities. |
| NEF 30 to NEF 40 | Individuals may complain; group action possible. |
| Greater than NEF 40 | Repeated vigorous complaints expected; group action probable. |

A reduction of one NEF unit is equivalent to a reduction of about two percent in the number of people highly annoyed and equal to a reduction of about 14 percent in the area exposed to the same level of noise exposure.* A difference in noise level below 5 EPNdB may not be significant as a single event, but if there are frequent occurrences the cumulative effect of that difference may be substantial, and the change in NEF value would reflect this.

The NEF method has been adopted by the Department of Housing and Urban Development. It will not guarantee mortgages on properties within NEF 40 and normally considers properties within NEF 30 unacceptable. NEF and other descriptors of cumulative noise exposure** are useful in determining the effect of federal noise control activity on airport communities and in commensurate local land use development and planning.

* The relationship between NEF reduction and land area reduction is logarithmic - i.e., a 50 percent reduction in land area is approximately equivalent to a 4.5 NEF unit reduction, while a 25 percent reduction in land area is approximately equal to a 2.0 NEF unit reduction.

** The Environmental Protection Agency has recommended that cumulative noise exposure be expressed by a measure called Day/Night Average Noise Level (Ldn). The equivalent values are:

$$\text{NEF 30} = \text{Ldn 65}; \text{NEF 40} = \text{Ldn 75}$$

2. How Noise Affects People

Aircraft noise disturbs the normal activities of airport neighbors--their conversation, sleep, and relaxation--and degrades their quality of life. Depending on the use of land contiguous to an airport, noise may also affect education, health services, and other public activities.

Although there may be indirect and subtle social and psychological harms, aircraft noise is predominantly an annoyance problem. It does not present any direct physical health danger to the vast majority of people exposed.

3. Whom Does Noise Affect and Where Do They Live

Approximately six million U.S. citizens currently reside on 900,000 acres of land exposed to levels of aircraft noise that create a significant annoyance for most residents.* Of this number, approximately 600,000 citizens reside within areas that are severely impacted by aircraft noise; that is, areas in excess of NEF 40.

The subjective reactions of individuals to aircraft noise vary substantially.** These differences become increasingly apparent in the comparison of noise problems surrounding specific airports, taking into consideration the number and kind of local complaints about noise, the political pressures on the airport operator to take unilateral action to restrict use of the airport, and the environmental and social contexts--climate, lifestyles, community concern--in which noise is perceived.

* Over NEF 30.

** The 1973 Annual Housing Survey conducted by the Bureau of the Census for the Department of Housing and Urban Development, indicated that of those surveyed:

20.2 percent experienced noise from airplane activity in the vicinity of their home. Of those experiencing noise, 34.2 percent considered the noise to be disturbing, harmful or dangerous; 6.3 percent felt airplane noise to be so objectionable that the household would like to move from the neighborhood.

In some communities, people's reaction to aircraft noise is increasingly being expressed in the courtroom where homeowners are receiving awards for nuisance and for diminution of property value (inverse condemnation). Over the past five years, airport proprietors have paid out over \$25,000,000 in legal judgments or settlements in noise-related suits and have spent over \$3,000,000 in legal fees, expert testimony and similar defense efforts.

The absence of lawsuits in some severely impacted areas and the recent occurrence of the most significant court precedents cause some observers to consider the pending suits to be merely the "tip of the iceberg," with substantial potential liabilities yet to arise. Others consider the concentration of lawsuits in certain areas to be an indication of the diversity in community response to aircraft noise, concluding that noise is not yet perceived as a substantial problem around many airports.

Partly as a reaction to such lawsuits, some airport proprietors have acquired substantial residential areas near their boundaries. The largest such programs have been undertaken by Seattle-Tacoma International and Los Angeles International Airports. Los Angeles alone has spent over \$130 million to purchase private residences and plans to spend \$21 million on sound-proofing schools and other public buildings near the airport.

Because the magnitude of the noise problem at any particular airport is a function of many factors, there is not any single criterion that defines a "noisy" airport. Depending on which criteria are used, the number of airports that are categorized as: "noisy", "noise sensitive", "noise problem", or "impacted by excessive noise", will vary. For example, the Air Transport Association (ATA) has identified 26 airports as "noise sensitive." On the other hand, the Airport Operators Council International has indicated that all airports receiving jet air carrier service now are or soon will be "noise impacted." By any definition, however, it is clear that an acute noise problem exists at many airports located in metropolitan areas.

Based on an analysis of citizen and Congressional complaints, the imposition of airport use restrictions, litigation and the number of people affected, the FAA has identified 100 airports where noise is in varying degrees an issue. A 1974 DOT study

of 23 major U.S. airports identified eight airports that have neighboring populations of over 25,000 residing within the NEF 40 contour (extremely serious problem), and 13 airports with at least 100,000 residing within the NEF 30 contours (considerable annoyance).^{*} For the 23 airports surveyed, five million people live within NEF 30 and a half a million within NEF 40. Clearly the vast majority of people exposed to serious levels of noise live near the major metropolitan airports.^{**} The following chart tabulates the number of people exposed to serious aircraft noise within the NEF 30 and 40 contours around the 23 airports included in DOT's study.

^{*} These airports, in the order of the number of people affected, are: LaGuardia, O'Hare, Kennedy, Newark, Boston, Los Angeles, Miami, Denver, Cleveland, San Francisco, Seattle, Buffalo, and St. Louis.

^{**} "Airport Noise Reduction Forecast," Report DOT-TST-75-3, October 1974.

EXTENT OF NOISE PROBLEM AT 23 MAJOR AIRPORTS

| <u>Airport</u> | 1972 Number of People ** (1000) | | <u>Court- suits</u> | <u>Restric- tions</u> |
|---------------------------|---------------------------------------|---------------|-------------------------|---------------------------|
| | <u>NEF 30</u> | <u>NEF 40</u> | | |
| 1. *Atlanta | 99.8 | 27.0 | Yes | |
| 2. *Boston | 431.3 | 32 | Yes | |
| 3. *Buffalo | 113.8 | 9.7 | | |
| 4. Chicago-Midway | 38.5 | 1.8 | | |
| 5. *Chicago-O'Hare | 771.7 | 66.6 | | |
| 6. Cleveland | 128.7 | 11.2 | | |
| 7. *Denver | 180.3 | 28.3 | | |
| 8. Dulles | 3.5 | 0 | | |
| 9. *J.F. Kennedy | 507.3 | 111.5 | | |
| 10. *LaGuardia | 1057.0 | 17.1 | | |
| 11. *Los Angeles | 292.4 | 51.1 | Yes | |
| 12. *Miami | 260.0 | 29.7 | Yes | |
| 13. *Minneapolis-St. Paul | 96.7 | 8.8 | Yes | Yes |
| 14. *Newark | 431.9 | 27.5 | | |
| 15. New Orleans | 32.5 | 8.9 | Yes | |
| 16. Philadelphia | 76.9 | 0.3 | | |
| 17. *Phoenix | 20.5 | 6.2 | | |
| 18. Portland | 1.2 | 0.3 | Yes | Yes |
| 19. *San Diego | 77.3 | 24.0 | Yes | |
| 20. *San Francisco | 124.1 | 11.4 | | |
| 21. *Seattle | 123.2 | 17.3 | Yes | Yes |
| 22. St. Louis | 100.0 | 8.5 | Yes | |
| 23. *Washington National | 24.4 | 2.0 | Yes | Yes |
| <u>TOTAL</u> | 5.0M | 0.5M | | |
| All other airports | 1.1M | .1M | | |
| <u>GRAND TOTAL</u> | 6.1M | 0.6M | | |

* Identified by Air Transport Association as being "noise sensitive."
Other airports on the current ATA list but not included in the study are: Detroit, Honolulu, Memphis, Las Vegas, Tampa, Ft. Lauderdale, San Juan, Oakland, and San Jose.

** Estimated from 1970 Census data

In response to public opposition to noise, some airports have imposed or are considering various use restrictions.* These measures include curfews, restrictions on the use of certain equipment, and limitations on operations. Such restrictions may have a substantial effect on interstate commerce and on the air navigation system.

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- * Major examples of completed or proposed actions by airport owners to reduce noise levels by restricting the use of the airport are:
- . Night Time Operating Restrictions - Lindbergh Field in San Diego, California; Pearl Harbor, Oahu; Washington National
 - . Total Jet Ban - Santa Monica Municipal Airport, California; Watertown Municipal Airport, Wisconsin
 - . Exclude non-Part 36 Jet Aircraft - Los Angeles International, Logan International, Boston
 - . Limit Number of Aircraft Operations - Stewart Airport, N.Y.
 - . Exclude Particular Types of Aircraft - Los Angeles International and Logan International have prohibited SSTs, JFK International is considering a similar ban
 - . Limit number of nighttime operations - Minneapolis-St. Paul
 - . Operational Noise Limits - JFK International
 - . Displaced Threshold - Logan International and many others
 - . Noise Preferential Runways - Atlanta, Miami, Tampa, San Juan, Boston-Logan, Hartford-Bradley, O'Hare, Midway, Cleveland Hopkins, Detroit-Wayne County, Minneapolis-St. Paul, Moisant-New Orleans, Denver, Pittsburgh, LaGuardia, Newark, Los Angeles, San Francisco and others.

In some of the above cases, the restrictions have been developed voluntarily through operator/users agreements, while in others they have been imposed unilaterally by the airport proprietor.

Curfews at large, medium and small hubs could have very serious effects. New York City is an illustration:

- . Air cargo shipments by weight remain at a relatively constant level for 24 hours at Newark and Kennedy. Accordingly, restrictions on night operations would severely disrupt freight shipment and handling. During May 1974, 37 percent of the total New York air cargo was transported between 10 p.m. and 7 a.m. local time. With a nationwide curfew applying to the same time period, the foreclosure of freight traffic to New York would extend to the hours during which 49 percent of the New York cargo moves.
- . A curfew's impact on mail shipments would also be significant. The movement of mail between 10 p.m. and 7 a.m. at New York amounted to 23 percent of the daily air transported mail for the sample studied. A nationwide curfew would curtail flights for the hours in which 35 percent of the New York mail moves.
- . Five to 13 percent of all passenger movements would be affected by similar New York and nationwide curfews. Much of the night passenger travel makes use of the reduced night coach fare structure enabling those with less financial resources to travel by air.

Other disbenefits are also likely if curfews are widely adopted. A substantial number of airplane operations might have to be shifted to earlier hours, which, while eliminating noise at night, would result in congestion and delays and an increase in the noise exposure during daylight and evening hours. Airlines would require more aircraft, more expensively operated, to overcome positioning problems if even one or two major hubs were curfewed. Time zone differences would cause additional scheduling problems. A curfew at O'Hare, for example, would cause a major restructuring of most of the domestic air transportation system.

4. The Source of Aircraft Noise: Composition of the Fleet

Some have argued that normal attrition will eventually take care of the aircraft noise problem, as the older, noisier planes are phased out of the fleet. The evidence indicates, however, that unless federal action is taken, the problem of airport noise will remain and, with increasing operations occurring at more airports, will be exacerbated. At the end of 1975, only 494 of the 2,148 jet airplanes in the U.S. air carrier fleet (about 23 percent) complied with the noise levels of Part 36. It bears repeating that the 77 percent of the fleet that exceed Part 36 levels were not required to meet those standards since they were produced prior to the effective date

of Part 36. Of the 1,654 aircraft in the fleet that do not meet Part 36 noise levels, 523 or 30 percent are the noisiest, four-engine models (Boeing 707s and 720s, Douglas DC-8s). Assuming normal attrition, the FAA projects that in 1990 48 percent of the air carrier fleet still will not meet Part 36.*

Since 1972, there has been a reduction in cumulative aircraft noise exposure around airports due in part to the introduction of new quieter jet aircraft and in part to the slowed rate of increase in passenger growth. Because of forecasted aviation growth, the airport noise problem is expected to increase in the future despite the introduction of quieter aircraft. Between 1975 and 1990, annual air carrier operations are estimated to increase from 10 million to 16 million, creating additional noise exposure that, without federal action, could more than offset the reduction in noise levels resulting from the replacement of the older airplanes by newer, quieter models. The major reason why progress in the replacement of older airplanes has been slow is the financial condition of the air carrier industry, to which we now turn.

* Details concerning the aircraft currently operating that do not meet Part 36 noise levels and an FAA projection of the non-Part 36 aircraft that will remain in commercial service in 1984 is set forth in the Environmental Impact Statement issued in conjunction with the Part 36 compliance regulation.

B. The Financial Problem

1. Ability of Airlines to Finance Aircraft Replacement

As older noisier airplanes are modified or replaced with new planes that meet or better Part 36 standards, the cumulative noise exposure around major airports will be reduced. The degree and speed with which this occurs depends upon the financial capability of the air carriers to modify or replace their older airplanes. Since additional noise reduction and other benefits accrue from replacement rather than retrofit of these planes, replacement appears to be a more desirable goal. But since replacement requires a much greater capital outlay than retrofit, the forecasted economic environment for the airline industry becomes doubly important.

In recent years many major airlines have experienced very serious difficulty in obtaining from private capital markets the financing necessary for equipment and other needs. Some have found themselves short even of working capital to continue operations. Between 1970 and 1975, the trunk carriers spent \$14.6 billion on capital needs: \$8.7 billion for aircraft, equipment and property; \$1.7 billion for leases of aircraft and engines; and most of the rest for debt service. The sources of this financing were mainly depreciation (\$5 billion to \$7 billion) and new long term debt (\$4 billion), with earnings contributing only about \$400 million. Equity financing was insignificant in this period, and low earnings and existing high debt levels forced some carriers to lease rather than purchase new aircraft. In addition, because of their recent earnings records, conventional sources of debt financing also have been effectively foreclosed to some carriers. Insurance companies and banks have been unwilling or unable to make further financing commitments and in recent months have stated publicly that, until the airlines' financial situation is sufficiently improved, new loans will not be forthcoming. In this financially strained economic environment, some carriers have been forced to resort to existing revolving credit arrangements to raise working capital.

The 1974/1975 period was particularly difficult for the industry. The sudden and substantial increase in fuel prices that began in 1974, accompanied by inflation in other cost categories, forced carriers to raise fares sharply. This coincided, unfortunately,

with the economic recession of 1974-75 when demand was already softening, and traffic levels were driven down even further. Moreover, many airlines in the late 1960s had purchased equipment to meet a predicted demand growth that never occurred, leaving them for a time with substantial excess capacity. The airlines' financial problems were exacerbated by the existing economic regulatory system which does not normally allow for timely fare increases, and denies airlines the pricing and management freedom available to other industries.

The airline industry's financial performance has been showing steady improvement since the end of the recession, however, and prospects for increased earnings over the next few years are good. Traffic growth is expected to resume, though at a long-term rate about equal to GNP growth, in contrast to more rapid growth rates in the past. Since, at present, the airlines have relatively few new aircraft on order, any near term traffic growth will be accommodated largely through increases in aircraft productivity. Load factors are likely to increase, earnings should remain fairly stable at a relatively high level, and new capital needs should be relatively modest until 1980.

After 1980, however, traffic growth will begin to press against the fleet's capacity, and airlines will begin to require new capital to finance the replacement of aging aircraft and to meet the growth demand. Leaving aside the new noise requirements, the Department estimates that between 1976 and 1985 the trunk carriers will need from 700 to 800 new aircraft and will require between \$22 and \$30 billion dollars to finance this acquisition (based on estimates by Government and private sector financial analysts). About \$6 billion will be needed for debt repayment and other uses. A mid-range estimate of total capital needs, therefore, would be \$32 billion.

Depreciation and sales of used aircraft can be expected to generate about \$15 billion of this amount, leaving \$17 billion to be financed through earnings and external sources. If earnings in the period were to rise to \$6 billion which implies a 9 percent return on equity, as contrasted with the average 2.8 percent return of the past five years, external financing needs would be \$11 billion. The airlines would probably be able to obtain this financing from conventional financial sources. The following table summarizes these estimates:

Sources and Uses of Funds (Mid-range Estimate)Uses of Funds: (\$ Billions)

| | |
|-------------------------------|----------|
| Property, Plant and Equipment | \$26 |
| Debt Repayment and Other | <u>6</u> |
| | \$32 |

Source of Funds:

| | |
|---|-------------|
| Depreciation and Sales of Used Aircraft | <u>\$15</u> |
| <u>Amount Required from Earnings and External Sources</u> | \$17 |
| Earnings Assumption | <u>6</u> |
| <u>External Financing Requirement</u> | <u>\$11</u> |

It is unlikely that capital needs can be met in this manner, however, if the industry does not achieve \$6 billion in earnings by the end of 1985. As indicated, this level of earnings implies an average annual return on equity three times as large as that earned over the last five years. It also assumes no unexpected negative developments, such as another recession or substantial new increases in fuel or other costs. These or other events would materially reduce the ability of the industry to earn a 9 percent return on equity.*

Under one scenario for meeting the new noise abatement regulation schedule, the "regular" 707s and DC-8s are retired and replaced with a new technology airplane and the stretched DC-8s and the remainder of the noncomplying fleet are retrofitted. This would increase the trunk carriers' capital requirements to 1985 by between \$5.5 and \$7.6 billion, an increase of 20 to 27 percent more than the amount required as discussed above. An incremental capital requirement of this magnitude would appear to be clearly beyond the industry's ability to finance, given the other financing burdens they will face in the early 1980s.

* It must be noted that the above estimates of financial needs and sources are predicated on industry-wide estimates. Carriers that are in relatively inferior financial position will have greater difficulty in obtaining needed funds than will other carriers.

We believe passage of regulatory reform bill (the proposed Aviation Act of 1977) to be reintroduced by the Administration in early 1977 will help the airlines with their overall financing problem. If the carriers had been operating under the regulatory environment envisioned in the proposed legislation they would not face major difficulty in adjusting prices to anticipate needed capital investment requirements and in obtaining the needed financing for the rule. Under the cost-based guidelines now used by the Civil Aeronautics Board in evaluating requests for fare increases, the capital outlay for new equipment, about a third of which is made before the aircraft is delivered, cannot be recovered through fare increases until the aircraft is delivered and in operation. Thus if today's economic regulatory environment continues, it may be impossible for the industry to commit to the manufacturers the substantial amount of cash necessary to get a new technology aircraft into production and delivered soon enough to replace the DC-8/707 fleet by the end of 1984.* Complicating the problem is the fact that a number of carriers are significantly weaker than others and it is these carriers who are the owners of large numbers of noisy aircraft and thus face some of the largest financing requirements.

It is clear that over the period in which the noisy aircraft must be modified or replaced, timely passage of the Aviation Act of 1977 should make a large difference in the carriers' ability to finance new aircraft purchases. However, this very desirable change in regulatory policy would not go into effect for at least a year, and if, as expected, its provisions are phased to allow ample time for adjustment to the new operating environment, its full effect will not be felt for several years.

2. The Aerospace Industry

Lasting noise reduction benefits will be achieved with newer, quieter technology, but a major new aircraft has not been developed in the United States for almost 10 years. In that time, important design and technological advances have been made -- many specifically intended to meet the new economic, operating, and environmental constraints dictated by rising labor costs, energy shortages, environmental requirements, and changing market demands.

* A large number of firm orders from U.S. air carriers are required by manufacturers before they can start production of a new aircraft. The cost of developing the new aircraft alone is put at \$500 million to \$1 billion.

In past programs to develop a new aircraft, American manufacturers have had enough preproduction sales to U.S. airlines to provide a solid base for financing front-end costs and to insure a near break-even position without foreign sales. This is not the case today, largely because of the financial condition of several of the largest U.S. airlines, which traditionally have led the way with new purchases. Although the carriers gradually are replacing their older inefficient jets, they are doing so with existing model aircraft, and these only in small numbers. The aircraft available now to replace four-engine jets are improperly sized for some markets (e.g., 727s, 747s L-1011s, or DC-10s). Most U.S. airlines would prefer to wait for a family of new, higher technology aircraft, if it were probable that these airplanes would be available within a few years.

Moreover, the public interest is served by the substantial and long term noise benefits available from new technology aircraft. The new technologies that will be utilized in meeting the stricter FAA noise regulations for new aircraft types to be promulgated by next March will bring about an average reduction of 12 to 16 EPNdB from the noise levels of the 707. The accelerated introduction of these quieter replacement planes offers obvious advantages.

Although we are concerned primarily in this policy statement with reducing the impact of aircraft noise, it would be myopic, if not negligent, for us to overlook opportunities for achieving other important national objectives as well. Consequently, we have considered, in addition to the noise benefits accruing from replacement of four-engine aircraft, the energy conservation benefits of improved fuel efficiency, the increasing importance of aeronautical exports to our aviation industry, the declining role of aerospace research and development as a percentage of national defense and NASA outlays, the stimulation of employment in the aerospace and related industries, and the advantages to the consumer of more advanced design and lower operating costs.

How the carriers choose to comply with our noise rules will have long range effects on the development of U.S. technology, employment, the viability and competitiveness of national aerospace industry, and the long term noise benefits that are to be realized. The sum of total benefits, however, mandates a careful assessment of the relative merits of retrofit or replacement by new technologies.

II. LEGAL FRAMEWORK

A. Legal Responsibilities of the Federal Government

The principal aviation responsibilities assigned to the Federal Aviation Administrator, and since 1966 to the Secretary of Transportation, under the Federal Aviation Act of 1958, as amended, concern safety and the promotion of air commerce. The basic national policies intended to guide our actions under the Federal Aviation Act are set forth in section 103, 49 U.S.C. 1303, which provides public interest standards, including:

- (a) The regulation of air commerce in such manner as to best promote its development and safety and fulfill the requirements of national defense;
- (b) The promotion, encouragement, and development of civil aeronautics;
- (c) The control of the use of the navigable airspace of the United States and the regulation of both civil and military operations in such airspace in the interest of the safety and efficiency of both; and
- (e) The development and operation of a common system of air traffic control and navigation for both military and civil aircraft.

To achieve these statutory purposes, sections 307(a) and (c) of the Federal Aviation Act, 49 U.S.C. 1348(a), (c), provide extensive and plenary authority to the FAA concerning use and management of the navigable airspace and air traffic control. The FAA has exercised this authority by promulgating wide-ranging and comprehensive federal regulations on the use of navigable airspace and air traffic control.* Similarly the FAA has exercised its aviation safety authority, including the certification of airmen, aircraft, air carriers, air agencies, and airports under Title VI of the Federal Aviation Act, section 601 et seq., 49 U.S.C. 1402 et seq., by extensive federal regulatory action.** In legal terms the federal government, through this exercise of its constitutional and statutory powers, has preempted the areas of airspace use and management, air traffic control and aviation safety. The legal doctrine of preemption, which flows from the Supremacy Clause of the Constitution, is essentially that state and local authorities do not have legal power to act in an area which already is subject to comprehensive federal regulation.

* See 14 C.F.R. Parts 71, 73, 75, 91, 93, 95 and 97.

** See 14 C.F.R. Parts 21 through 43, 61 through 67, 91, 121 through 149.

Because of the increasing public concern about aircraft noise that accompanied the introduction of turbojet powered aircraft into commercial service in the 1960s and the constraints such concern posed for the continuing development of civil aeronautics and the air transportation system of the United States, the federal government in 1968 sought - and Congress granted -- broad authority to regulate aircraft for the purposes of noise abatement. Section 611 of the Federal Aviation Act, 49 U.S.C. 1431, constitutes the basic authority for federal regulation of aircraft noise. In 1972, displaying some dissatisfaction with the FAA's methodical regulatory practice under section 611, the Congress amended that statute in two important respects. To the original statement of purpose -- "to afford present and future relief from aircraft noise and sonic boom" -- it added consideration of "protection to the public health and welfare." It also added the Environmental Protection Agency (EPA) to the rulemaking process. Section 611 now requires the FAA to publish EPA proposed regulations as a notice of proposed rulemaking. Within a reasonable time of that publication, if the FAA does not adopt an EPA proposal as a final rule after notice and comment, it is obliged to publish an explanation for not doing so in the Federal Register.

Whether considering a rule it proposes on its own initiative or in response to the EPA, the FAA is required by section 611(d) to consider whether a proposed aircraft noise rule is consistent with the highest degree of safety in air commerce and air transportation, economically reasonable, technologically practicable and appropriate for the particular type of aircraft.

The FAA acted promptly in implementing section 611. On November 18, 1969, it promulgated the first aircraft noise regulations, Federal Aviation Regulations, Part 36, 14 C.F.R. 36, which set a limit on noise emissions of large aircraft of new design. It reflected the technological development of the high-bypass ratio type engine, and was initially applied to the Lockheed 1011, the Boeing 747, and the McDonnell-Douglas DC-10. The Part 36 preamble announced a basic policy on source noise reduction and a logically phased strategy of bringing it about. The Part 36 standard would serve as the basic standard for aircraft engine noise and was initially applicable to new types of aircraft. As soon as the technology had been demonstrated, the standard was to be extended to all newly manufactured aircraft of already certificated types. Ultimately, the preamble indicated, when technology was available the standard would be extended to aircraft already manufactured and operating. The last step would require modification or replacement of all aircraft in the fleet which did not meet the Part 36 noise levels. The first two steps have already been accomplished. This third step is being taken now.

Part 36 is commonly misunderstood. Many believe that it established a federal standard of acceptable noise emissions. It did not. Part 36 basically established the quietest uniform standard then possible, taking into account safety, economic reasonableness and technological feasibility. Many think it is a standard that all American aircraft must meet. It is not. Part 36 to date has been applicable only to newly manufactured aircraft and is not applicable to aircraft manufactured before 1973. Nearly eighty percent of the present fleet is not obliged to and does not meet the Part 36 standard. Many think that it is an operating rule -- that is, that planes that do not meet it in daily operations may not fly. It is not. Part 36 applies to aircraft at the time of their manufacture, and does not apply at all to foreign-manufactured aircraft operated by foreign carriers.*

In addition to its regulatory authority over aircraft safety and noise, the FAA has long administered a program of federal grants-in-aid for airport construction and development. Through its decisions on whether to fund particular projects, the FAA has been able, to a degree, to insure that new airports or runways will be selected with noise impacts in mind. That indirect authority was measurably strengthened when in 1970 the Airport and Airway Development Act expanded and revised the FAA's grant-in-aid program for airport development and added environmental considerations to project approval criteria. 1976 Amendments to the 1970 Act have increased funding levels and provided new authority to share in the costs of certain noise abatement activities, but the ability of the FAA to provide financial assistance remains limited in terms of both percentage of project costs and the types of projects eligible for federal aid.

B. Legal Responsibilities of State and Local Governments

While the federal government's exclusive statutory responsibility for noise abatement through regulation of flight operations and aircraft design is broad, the noise abatement responsibilities of state and local governments through exercise of their basic police powers are circumscribed. The scope of their authority has been most clearly described in negative terms, arising from litigation over their rights to act.

The chief restrictions on state and local police powers arise from the exclusive federal control over the management of airspace. Local authorities long have been preempted by the federal assumption of authority in the area from prohibiting or regulating overflight for any purposes. That principle was found in 1973 to include any exercise of police power relating to aircraft operations in City of Burbank v. Lockheed Air Terminal, 411 U.S. 624 (1973). In the Burbank

* Annex 16 to the Chicago Convention provides an international noise certification standard.

case, the Supreme Court struck down a curfew imposed by the City in the exercise of its police power. The Court's reliance on the legislative history of section 611 and the 1972 amendments to it indicate that other types of police power regulation, such as restrictions on the type of aircraft using a particular airport, are equally proscribed. The Court, however, specifically excluded consideration of the rights of an airport operator from its decision.

There remains a critical role for local authorities in protecting their citizens from unwanted aircraft noise, principally through their powers of land use control. Control of land use around airports to insure that only compatible development may occur in noise-impacted areas is a key tool in limiting the number of citizens exposed to noise impacts, and it remains exclusively in the control of state and local governments. Occasionally, it is a power enjoyed by individual airport operators; some operators are municipal governments that can impose appropriate land use controls through zoning and other authority. But even where municipal governments themselves are operators, the noise impacts of their airports often occur in areas outside their jurisdiction. Other police power measures, such as requirements that noise impacts be revealed in real estate transactions, are also available to them. Finally, local governments have legal authority to take noise impacts into account in their own activities, such as their choice of location and design for new schools, hospitals, or other public facilities, as well as sewers, highways and other basic infrastructure services that influence land development.

C. Legal Responsibilities of Airport Proprietors

The responsibilities of state and local governments as airport proprietors are far less restricted. Under the Supreme Court decision in Griggs v. Allegheny County, 369 U.S. 84 (1962), proprietors are liable for aircraft noise damages resulting from operations from their airport. The proprietor, the court reasoned, planned the location of the airport, the direction and length of the runways, and has the ability to acquire more land around the airport. From this control flows the liability, based on the constitutional requirement of just compensation for property taken for a public purpose. The Court concluded: "Respondent in designing the Greater Pittsburgh Airport had to acquire some private property. Our conclusion is that by constitutional standards it did not acquire enough." The role of the proprietor described by the Court remains the same today.

But the proprietor's responsibilities do not end there. A three-judge district court observed in Air Transport Association v. Crotti, 389 F. Supp. 538 (N.D. Cal., 1975):

"It is now firmly established that the airport proprietor is responsible for the consequences which attend his operation of a public airport; his right to control the use of the airport, is a necessary concomitant, whether it be directed by state police power or by his own initiative.... That correlating right of proprietorship control is recognized and exempted from judicially declared federal preemption by footnote 14 [of the Burbank opinion] . Manifestly, such proprietary control necessarily includes the basic right to determine the type of air service a given airport proprietor wants its facilities to provide, as well as the type of aircraft to utilize those facilities...."

The Crotti case upheld in part a California airport noise statute imposing noise abatement duties on airport proprietors and established the principle that a state statute could reach proprietors that are governmental agencies and hence arms of the state. The Burbank preemption rule thus has not extended to proprietors, except with respect to regulations that actually affect the flight of aircraft. The portion of the California statute struck down by the court provided for criminal sanctions against the operator of an aircraft that exceed a single-event noise standard on takeoff or landing, a clear interference with the FAA's control over flight operations in the navigable airspace.

The Crotti principle has recently been upheld in National Aviation v. City of Hayward, No. C-75-2279 RFP (N.D. Cal., July 13, 1976), a case in which an air freight company sought to enjoin a curfew on noisier aircraft imposed at the municipally owned Hayward Air Terminal in California. The court addressed squarely the legal issue of the rights of a proprietor and found that the curfew had not been preempted:

[T]his court cannot, in light of the clear Congressional statement that the amendments to the Federal Aviation Act were not designed to and would not prevent airport proprietors from excluding any aircraft on the basis of noise considerations, make the same findings [as the Burbank Court] with respect to regulations adopted by municipal airport proprietors..." Slip opinion, 14, citing S. Rep. No. 1353, 90th Cong., 2d Sess., 6-7.

The court went on to indicate that the FAA had the authority to preempt such proprietor regulation, although it had not yet exercised it. The court also found that the ordinance, which required some of the plaintiff's aircraft to use another airport between 11 p.m. and 7 a.m., had an effect on interstate commerce, but that the effect was:

"...incidental at best and clearly not excessive when weighed against the legitimate and concededly laudable goal of controlling the noise levels at the Hayward Air Terminal during late evening and morning hours." Slip opinion, 19.

The power thus left to the proprietor - to control what types of aircraft use its airports, to impose curfews or other use restrictions, and, subject to FAA approval, to regulate runway use and flight paths, is not unlimited. Though not preempted, the proprietor is subject to two important Constitutional restrictions. He first may not take any action that imposes an undue burden on interstate or foreign commerce and, second may not unjustly discriminate between different categories of airport users.

These limitations on the proprietor's control over the use of the airport have not been addressed by the Supreme Court, and it remains unclear the extent to which Constitutional limitations would prevent some of the restrictions that have been imposed or proposed by proprietors in recent years.

Our concept of the legal framework underlying this policy statement is that proprietors retain the flexibility to impose such restrictions if they do not violate any Constitutional proscription. We have been urged to undertake - and have considered carefully and rejected - full and complete federal preemption of the field of aviation noise abatement. In our judgment the control and reduction of airport noise must remain a shared responsibility among airport proprietors, users, and governments.

The legal framework with respect to noise may be summarized as follows:

1. The federal government has preempted the areas of airspace use and management, air traffic control, safety and the regulation of aircraft noise at its source. The federal government also has substantial power to influence airport development through its administration of the Airport and Airway Development Program.
2. Other powers and authorities to control airport noise rest with the airport proprietor - including the power to select an airport site, acquire land, assure compatible land use, and control airport design, scheduling and operations - subject only to Constitutional prohibitions against creation of an undue burden on interstate and foreign commerce, unjust discrimination, and interference with exclusive federal regulatory responsibilities over safety and airspace management.
3. State and local governments may protect their citizens through land use controls and other police power measures not affecting aircraft operations. In addition, to the extent they are airport proprietors, they have the powers described in paragraph 2.

III. THE FEDERAL RESPONSE

Consistent with the legal principles set forth above, this section explains in greater detail the program we intend to implement and our reasons for adopting it.* The cornerstone of the federal program is the requirement that airplanes comply with Part 36 noise standards within six to eight years. This policy clarifies the relative responsibilities of all participants in achieving reduced aircraft noise exposure. The way in which the air carriers meet this requirement for particular types of aircraft will have substantial implications not only for noise reduction but also for other national objectives - energy conservation, employment, and export promotion - as well. Moreover, the effectiveness of any resource commitment which may be required to meet this standard is contingent upon complementary action by airport proprietors and local government, actions that will be encouraged with federal financial assistance, other incentives, grant conditions and technical assistance. Complementary federal action includes noise abatement procedures, research and development and stricter noise standards for new technologies. The complete comprehensive strategy to bring about substantially reduced noise impact on residential populations is set forth in the following federal action program.

A. Quieting the Air Carrier Fleet

1. Federal Regulation of Existing Aircraft

Federal action is required to ensure that commercial aircraft meet Part 36 noise levels within the next decade. The normal incentives of the private marketplace do not operate to achieve optimal noise reduction. Noise is an "external cost" of providing certain goods and services. In the case of aircraft noise, the recipient of the noise -- such as the resident under the flight path -- is most often not a party to the market transactions (e.g., the purchase and sale of aircraft and of aircraft passenger tickets) that result in the noise that affects him. The purchasers of aircraft service -- the aviation passengers -- are not necessarily the recipients of the aircraft noise, and therefore the provider of that service (the airline) does not have a normal market incentive to reduce noise. Because the market place does not compensate airport neighbors for noise damages, they may seek redress from the courts. However, law suits are an expensive, time consuming and uneven way of dealing with the problem, and damage payments may drain away scarce resources that could be applied to reducing noise impact.

Because there are important differences among the airplanes that do not meet Part 36, it is useful to consider them separately.

* The projections set forth in this document are based on the best available data. We realize it is subject to continuing refinement and improvement.

A significant problem is posed by the older, four-engine models (707s, 720s, DC-8s) in the current fleet. These aircraft are, for the most part, powered by JT3D turbofan engines and impose the most severe noise insult on airport neighbors because they cause the noisiest single events (10 to 12 EPNdB over Part 36). They are perceived to be at least twice as loud as the new wide-body aircraft. They are particularly significant contributors to the overall noise level at major airports having serious noise problems.

Replacement or acoustic modification (retrofit) of these older four-engine jets must be given high priority. Acoustic modification or retrofit consists of the addition of quiet nacelles using sound absorbing material (SAM) that reduces significantly the noise levels of these four-engine aircraft to at least the Part 36 noise levels. This approach, however, is subject to the availability of retrofit kits and, has been shown to be somewhat fuel inefficient. Because of the environmental benefits of replacement, discussed below, retirement of most of these older aircraft is clearly preferable.

The older two- and three-engine aircraft (727s, 737s, DC-9s, BAC 1-11s, mainly powered by JT8D turbofan engines) are not as noisy on single events. But, because they are medium and short-range models, they take off and land more than four times as often per day as the long-range four-engine models. Since they are also more pervasive in our domestic system, they account for most of the air carrier operations (80 percent) nationwide.*

* Scheduled Air Carrier Jet Operations**
Average Daily, 1975

| <u>Airplane Type</u> | <u>Number of Operations</u> | <u>Percent</u> | <u>Percent Meeting Part 36 Noise Standards</u> |
|----------------------|-----------------------------|----------------|--|
| 707/DC-8 | 2225 | 10 | 0 |
| 747 | 411 | 2 | 54 |
| DC-10/L-1011 | 1340 | 6 | 100 |
| 727 | 9208 | 41 | 26 |
| 737/DC-9/BAC 1-11 | 9334 | 41 | 8 |
| Total | 22518 | 100 | 21 |

** An operation is a takeoff or a landing.

Although the technology to retrofit these JT8D aircraft is available, the resulting reductions in noise levels is not as large as the reductions for the JT3Ds. A modified JT8D airplane is significantly quieter than an unmodified JT8D airplane, especially on approach.* We estimate that the cost of retrofitting all of these airplanes will be about \$223 million in 1976 dollars. Since most of these airplanes have a long remaining useful life, we anticipate that they will be modified rather than replaced.

Because of their larger numbers, more frequent operation, and more widespread use, the cumulative effect of reducing the noise of these JT8D aircraft is greater than that for the four-engine aircraft alone. By requiring that both the two- and three- and the four-engine aircraft meet Part 36 noise levels, we will realize significantly greater reduction at the 25 largest air carrier airports at the time compliance is completed. Additionally, many more air carrier airports would benefit from quieting of the two- and three-engine airplanes. Without including the two- and three-engine jets, which constitute 70 percent of that part of the operating fleet that does not meet Part 36 and which account for 80 percent of the air carrier operations nationwide, 75 percent of the air carrier airports in the country would not receive any noise benefit and 85 percent would not receive any significant benefits.

There are also about 50 early 747s that do not meet Part 36 noise levels. Economics clearly make retrofit the logical alternative for these aircraft, which have a long remaining useful life, and a retrofit kit for modification of these aircraft has been included in later production versions of the 747.

* Noise measurements taken during routine airline operations at airports in the New York City area showed that 727-200 aircraft with SAM retrofit treatment operated at 6.5 PNdB (estimated from dBD measurements) lower levels on approach than did 727-200 aircraft without retrofit.

The following table illustrates the comparative reductions expressed in EPNdB of the retrofit of those airplanes that do not meet FAR 36.

| <u>Aircraft</u> | <u>Condition</u> | <u>FAR 36 Limit</u> | <u>Non- Retrofit</u> | <u>Full Retrofit</u> |
|-----------------|------------------|-------------------------|--------------------------|--------------------------|
| 707-320B | Takeoff | 103.7 | 113.0 | 102.2 |
| | Approach | 106.3 | 116.8 | 104.0 |
| | Sideline | 106.3 | 102.1 | 99.0 |
| DC-8-61 | Takeoff | 103.5 | 114.0 | 103.5 |
| | Approach | 106.2 | 115.0 | 106.0 |
| | Sideline | 106.2 | 103.0 | 99.0 |
| 727-200 | Takeoff | 99.0 | 101.2 | 97.5 |
| | Approach | 104.4 | 108.2 | 102.6 |
| | Sideline | 104.4 | 100.4 | 99.9 |
| 737-200 | Takeoff | 95.8 | 92.0 | 92.0 |
| | Approach | 103.1 | 109.0 | 102.0 |
| | Sideline | 103.1 | 103.0 | 103.0 |
| DC-9 | Takeoff | 96.0 | 96.0 | 95.0 |
| | Approach | 103.2 | 107.0 | 99.1 |
| | Sideline | 103.2 | 102.0 | 101.0 |
| 747-100 | Takeoff | 108.0 | 115.0 | 107.0 |
| | Approach | 108.0 | 113.6 | 107.0 |
| | Sideline | 108.0 | 101.9 | 99.0 |

The following table provides an estimate of the numbers of airplanes to be modified acoustically or replaced. Also included are what the associated capital costs of retrofit would be if the turbofan-powered 707s and DC-8s are not retired or replaced earlier than they otherwise would have been as a result of the new federal regulation.

| <u>Airplane Type</u> | <u>Number to be modified</u> | <u>Average Cost (million \$)</u> | <u>Total Cost (million \$)</u> | <u>1975 Present Value (million \$)</u> |
|--------------------------|----------------------------------|--------------------------------------|------------------------------------|--|
| 727 | 454 | .225 | 102 | 60 |
| 737 & DC-9 | 448 | .27 | 121 | 71 |
| 747 | 45 | .25 | 11 | 6 |
| 707 & DC-8 | <u>270</u> | 1.2 | <u>324</u> | <u>159</u> |
| TOTAL | 1217 | | 558 | 296 |

These costs are in constant 1975 dollars, and do not include any tax benefits or changes in operating costs. The present values were computed using a 10% discount rate before inflation. If changes in operating costs are also included, the 1975 present value costs increase to a total of \$440 million. These operating cost increases are primarily the result of the increased fuel inefficiency of modified 707s and DC-8s and include the cost of an additional 320 million gallons of fuel which would be consumed by these airplanes.

2. Economic Benefits from a Mixed Replacement and Modification Program

Despite the arguments that the variables and projections are uncertain, cost-benefit analysis is a useful tool to compare means of reducing aircraft noise. Our analysis indicates that replacement of all JT3D aircraft and acoustic modification of the JT8D aircraft will yield positive net benefits of \$350 million to the airlines* whereas altering the scenario by retrofitting the JT3D airplanes instead would cost them \$440 million. The primary reasons for these differences are varying fuel consumption and maintenance costs.

A replacement program also produces many benefits that are difficult to calculate, but which would be significant.

- . The noise benefit from replacing these jets with new aircraft or new technology will range from a 12 to 16 EPNdB improvement over current 707/720 and DC-8 airplanes.
- . Replacement would offer substantial advantages in increased fuel efficiency over the 707/720 and DC-8, 20 percent with currently-available replacement models, and as much as 30 percent for the new-technology airplanes compared to a fuel penalty of approximately one percent for modified 707 and DC-8 airplanes.
- . Replacement would provide aircraft that will meet the new, rigorous air pollutant emissions standards effective in 1979.

* See the FAA benefit-cost study published as an attachment to the Final Environmental Impact Statement issued November 17, 1976.

- . Replacement would strengthen the aerospace industry, stimulating the purchase orders to begin manufacture of aircraft of new design, which the airframe manufacturers cannot undertake now because of the lack of firm orders from their customers.
- . Replacement would contribute to the development of aviation technologies for export. Aerospace products have been second only to agricultural products as the nation's leading exports. Foreign operators own over 500 JT3D airplanes for which U.S. replacements sized for many of the markets being served are not now available. Most of these airplanes would be replaced if a properly sized replacement were available.
- . Replacement would provide many more jobs - each billion dollars in aircraft sales generates 60,000 job-years directly or indirectly in aerospace or related industries.
- . Replacement would offer to the carriers the advantage of more economic aircraft configurations resulting from the application of advanced technologies. These include new aerodynamic concepts, lighter propulsion systems, improved safety from inflight control systems, and new structural materials. With enactment of regulatory reform, many of these economies would be reflected in the fares.

In light of these benefits, we believe that it would be economically preferable for the Nation if most of the four-engine aircraft are replaced with new technology aircraft.

3. Time Frame

Since some combination of replacement and retrofit is advantageous in bringing current airplanes into compliance with the noise standards of Part 36, we have considered what would be a reasonable time frame to require such action.

In establishing a deadline, we have been concerned with the length of time needed to develop, certificate, produce, and install retrofit kits for those airplanes for which the operators decide that retrofit is best. The manufacturers have indicated that it will take six years to complete retrofit of the 747s,

727s, 737, and DC-9s, six to eight years to complete the 707s and DC-8s, including kit production* and installation time.

Retrofit kits are currently certificated and ready for installation for the two- and three-engine aircraft and the 747s, and are being installed on those aircraft that are currently in production. It may take 28 months and 36 months, respectively, to design and certificate kits for the 707s and DC-8s, with fabrication and installation time to follow. Thus, time to fabricate the required number of kits, and to install them during refurbishment periods for fleet aircraft must govern the mandatory compliance periods. Given these considerations, we have concluded that aircraft should be required to meet Part 36 noise levels within certain time periods.

The Federal Aviation Administration will promulgate a rule requiring that subsonic jet airplanes in domestic** service with maximum weight in excess of 75,000 lbs., that do not meet the present Federal Aviation Regulations Part 36 noise levels, must meet those noise levels or be retired from the fleet within six to eight years in accordance with the phased-in schedule set forth on pages 5-6 of this policy statement.

These time periods, which are established on the basis of the time it would take to complete the development, production, and installation of retrofit kits for most of the existing fleet, will start to run on January 1, 1977. These time periods are also adequate to enable the development of new technologies for replacement of older, four-engine aircraft if adequate financing is available. Measures imposed by other jurisdictions that would require more accelerated compliance with Part 36 requirements would conflict with the purpose of this federal regulation.

| Airplane | From Production Decision to First Kit Delivery | Production Rate Ship Sets Per Month |
|----------|--|---|
| | | |
| 707 | 2-1/3 yrs | 22 |
| DC-8 | 3 yrs | 8.5 |
| 727 | 1-1/2 yrs | 38 |
| 737 | 1-1/2 yrs | 10 |
| DC-9 | 1-3/4 yrs | 15 |
| 747 | 1 yr | 5 |

** Domestic service as used here includes flights to U.S. territories outside continental United States, generally classified as "overseas".

4. International Air Carriers

The United States will seek early agreement through the International Civil Aviation Organization (ICAO) on noise standards and an international schedule for compliance with Annex 16 or Part 36. In the event that agreement is not reached within three years, from January 1, 1977, then regulatory action will be taken to require all airplanes operated by all international operators to meet the noise level standards of Part 36 or Annex 16 during the five-year period thereafter at a phased rate of compliance similar to that established for domestic operations. The ultimate requirements applied to U.S. international flag carriers will not be any more stringent than those applied to foreign air carriers, because it would place the U.S. international flag carriers at a competitive disadvantage if they had to comply with the noise standards sooner than their foreign competition. Where U.S. air carriers serve both domestic and foreign routes, the delayed international requirements will be applied only for that percentage of total operations that are in international service. These requirements may be superseded by agreement reached through ICAO, in which the United States concurs and which does not discriminate against U.S. carriers.

B. Financing Mechanism

President Ford has instructed the Department of Transportation to promulgate rules to require that all aircraft in domestic service meet noise standards within eight years. He indicated at that time that he would again urge the Congress to enact his aviation regulatory reform measure to create an improved economic climate for the airline industry that would enable it to comply with these standards. He further directed the Secretary to begin public hearings promptly to assess whether additional financing assistance, if any, may be necessary to guarantee compliance with these standards within eight years.

At the public hearing, scheduled for December 1, 1976, we must first consider whether any financing arrangements at all are necessary. If there is persuasive evidence and documentation that such assistance is necessary, alternative financing proposals must be weighed against certain goals.

First, we would prefer that the costs of noise abatement be borne by users of air transportation, passengers and shippers. Any shift of that burden to the general public must be avoided. Second, enough financing must be available to enable the carriers to replace a significant portion of their noisy four-engine jets with a new generation

airplane but not so much financing as to encourage the purchase of excess capacity. Third, federal involvement in any financing mechanism should be limited and not disturb unduly the mechanism of the private capital markets, nor unreasonably constrain the flexibility of air carrier management in determining how to comply with the noise regulation. Fourth, the cost of transportation to the passenger and shipper should not be increased. Fifth, assuming the enactment of aviation regulatory reform, we should consider both the need for additional financing in the improved aviation economic environment that will emerge and the consistency of any proposal with a less regulated aviation system. Finally, we should consider and assess the additional benefits to the public that would accrue from a replacement program, and the accelerated production of new technology airplanes, and determine whether these benefits outweigh the cost of such a program.

To address these issues and hear recommendations from concerned parties, a public hearing will be conducted on aviation noise financing on December 1, 1976.

C. Additional Federal Action

1. Source Regulation for Future Aircraft

The development of jet engine noise source technology since the high-bypass ratio engine was first produced will allow further reduction of noise emissions from aircraft designed in the future. Therefore, FAA proposed to reduce the Part 36 noise levels for future design aircraft in NPRM 75-37 issued October 29, 1975. While recognizing that the full benefit of such a rule will not be felt until the next generation of aircraft enter regular service in substantial numbers, the FAA will soon complete its consideration of new, lower noise standards for future design aircraft. These standards will require that recent advances in noise suppression technology be employed if they are practicable, economically reasonable, and appropriate for the particular type of aircraft. These regulations would be applicable to all newly designed subsonic aircraft type certificated after the effective date of the regulation. The FAA plans to issue these regulations by March 1, 1977.

On September 30, 1976, the EPA submitted a proposed regulation to FAA on the subject of source regulation for future design aircraft. That proposal has been published by FAA as a notice of proposed rulemaking (41 F.R. 47358) and a public hearing will be held on December 14, 1976. The only difference between the FAA regulatory proposal and that of EPA is in the establishment of noise levels for aircraft designed for the 1980-1985 time period and beyond 1985 as well. While these EPA proposals are

being considered, the FAA believes it is important and prudent to establish lower noise levels for future designed aircraft and continue to analyze the technological developments to determine if even further reduced noise levels can be established.

In addition, the FAA is working through the International Civil Aviation Organization to obtain international agreement on noise standards which would make internationally established standards virtually identical to United States noise standards. This proposal was presented for public comment in the Federal Register on October 28, 1976, as NPRM 75-37C. Both of these important proposals and the comments received on them will be thoroughly considered and carefully analyzed before final action is taken.

The FAA has already established noise standards on the subject of noise produced by propeller driven airplanes. In developing those standards, the FAA received a number of suggestions from the EPA which were adopted and incorporated into the final rule. These included the use of six rather than four noise certification test overflights and the use of longer standard takeoff distances in calculating performance corrections. These suggested improvements were submitted to FAA in the course of FAA's rulemaking action on this subject and were subsequently included as part of a formal EPA noise regulatory proposal submitted to FAA. The proposed disposition of the EPA regulatory proposal has been forwarded by FAA to the EPA for consultation pursuant to the provisions of the Noise Control Act. The time for this consultation has been extended by FAA at the request of the EPA and therefore the FAA is deferring its final action on this proposal at this time at the request of the EPA.

Using information being acquired on a continuing basis from the Concorde demonstration, the FAA will act consistent with the statutory requirements to promulgate a noise rule applicable to supersonic aircraft not later than thirty days after the conclusion of the 16-month demonstration periods.

2. Aircraft Operating Procedures

Operational procedures for the control of aircraft departures and arrivals at airports can effectively complement the reduction of aircraft source noise emissions. For example, operational controls that apply reduced thrust settings near the ground augment the noise reduction achieved through retrofitting because with the sound absorbing material or "quiet nacelle" modification of the JT3D and JT8D aircraft the noise reduction achieved becomes more effective at lower thrust levels. It must be clearly understood that, although much can be gained by operational procedures, they are not alternatives to reducing noise at the source by replacing or retrofitting the noisier airplanes.

Many air traffic and airspace management operational procedures are now used at particular airports to meet their particular needs. For some airports, normal approach paths cover substantial residential populations (Los Angeles); others are particularly sensitive to takeoffs (Miami). Where possible, approach paths are designed to avoid residential neighborhoods. At some airports, steep climbs are used on takeoff over water areas so that aircraft will be higher than they would be otherwise when they reach inhabited areas. Where aircraft must climb over residential areas, they often do so with reduced power in order to minimize excessive noise from greater engine thrust.

In addition to these measures, which are used at many airports, two standardized operational procedures have been under consideration by the FAA. One EPA approach proposal involved the development and implementation of the use of a two-segment landing approach path for aircraft. Briefly, that procedure entails the use of a steeper glide slope (e.g., 5 to 6°) during the early stages of approach, followed by stabilization of the aircraft on the normal 3° glide slope for final approach and touchdown. During the steeper portion of the approach, the aircraft is higher from the ground and requires less engine power, thus achieving noise reductions at more distance points from the airport on the approach pattern. However, this would not provide significant noise relief to persons living close to an airport and could exacerbate their problem since there would probably be an increase in power required as the aircraft changes configuration from the steeper glide slope to the reduced glide slope. Additionally, this procedure has an inherent safety problem related to the impact of aircraft wake vortices on aircraft flying a standard 3° approach behind an aircraft utilizing a two-segment approach. Finally, this two-segment approach procedure could be applied at a limited number of airports because of limited equipment availability.

The second standardized approach procedure involves the use of minimum certificated flaps. This procedure was developed by FAA to abate airplane noise and then proposed by EPA as a regulatory action. Through the use of minimum certificated flaps during approach, aerodynamic drag is reduced, whereby less engine thrust is required. This has multiple advantages because reduced thrust results not only in a fuel saving but also a reduction in the source noise of the airplane over the entire approach phase, thereby providing a noise reduction along the entire approach path. Moreover, it is a procedure which can provide noise benefits at all rather than a limited number of airports. Because it is a stabilized approach procedure, it reduces cockpit workload in that no transition is required

from a 6° to a 3° glide slope and the inherent potential wake vortex problem a serious safety problem for following aircraft of is eliminated. Final regulations and procedures on a noise abatement approach procedure will be issued by FAA by January 1, 1977.

Several opinions exist regarding the best noise abatement departure procedure following takeoff. The FAA requires that turbine-powered and large aircraft climb as rapidly as possible to 1500 feet above the ground. This procedure provides some noise relief by getting the noise source - the airplane - away from populated areas as rapidly as possible. FAA is in the process of evaluating different departure procedures which could be implemented after the 1500 foot altitude is reached. The issue is complicated by the fact that airports are unique in terms of their surrounding geography and adjacent land use. This means that there may be no single optimum noise abatement departure procedure.

The FAA currently recommends, in Advisory Circular 91-39, (January 18, 1974) a procedure that incorporates a reduction in engine power from takeoff thrust to normal climb power at an altitude of 1500 feet above ground level after takeoff with subsequent acceleration and climb after passing through 3000 feet by changing the deck angle and retracting the flaps. This procedure is generally used by scheduled air carriers. Northwest Airlines regularly uses a somewhat different departure procedure, in which the airplane is accelerated at takeoff power with an accompanying reduction in the deck angle and flap retraction followed by a larger power reduction than with the Advisory Circular procedure. Both procedures have merit in that both provide noise relief by reducing source noise through a reduction in engine power. The degree of perceived noise, however, depends on the location of noise sensitive areas beneath the departure path and the altitude and engine power of the airplane over those areas. The FAA expects to complete regulatory action on this subject by January 1, 1978.

Another operational rule under consideration involves possible restrictions on minimum altitudes in terminal areas by keeping airplanes high. Such restrictions would reduce the noise impact on the ground by maximizing the distance between the airplane and persons on the ground. This has been the FAA "Keep 'Em High" Program. A proposal on this subject to convert it from an air traffic management program to a regulatory requirement was submitted to the FAA by the EPA and was published in the Federal Register on January 6, 1975, as NPRM 75-40.

The design of each terminal area air traffic pattern is carefully constructed to meet the particular characteristics of the airport or airports encompassed within that terminal area. The runway configuration of the airport, character of the surrounding terrain,

proximity of other airports, the requirements to avoid when possible low altitude flight over communities when arriving or departing the airport, are among the many considerations that must be made in designing terminal area procedures. It is not feasible to develop a single rule that would be applicable to all terminal areas for all airports. Regulations, which are relatively difficult to change, could have a severe and far-reaching impact on the air traffic system in the flexibility required to adjust air traffic procedures to compensate for weather changes, traffic congestion and safety considerations. Regulatory action in this area would be unduly restrictive without achieving significant improvements in aircraft noise abatement since the proposed rules were not significantly different from the existing air traffic management program and would have adverse energy and economic impacts through increased flight time and increased fuel consumption.

The FAA concurs with the objective of the EPA proposed regulations, specifically to reduce the noise exposure on the ground. Through recent FAA studies of ways to improve the efficiency of the air traffic control system to conserve fuel, a new procedure has been developed which improves safety through reduced low altitude flying time, standardizes high performance aircraft arrival procedures, equalizes the arrival delays through regulating the traffic flow, and provides for departures to climb to cruise altitude unrestricted. These new procedures will soon be made final in an FAA Order on Local-Flow Traffic Management. The Order will apply to all airports where high performance aircraft operate. The existing "Keep-'Em-High" Order will be phased out as the provisions of the new Order are implemented. A substantial noise benefit can be realized through the implementation of the Local-Flow Traffic Management Order over those benefits achievable under the FAA "Keep-'Em-High" program or the EPA proposed minimum altitude regulatory proposal.

All of these operational procedures designed to provide noise relief have been the subject of a number of discussions with the EPA and have been the subject of formal consultation between the FAA, the EPA and the Secretary of Transportation. That consultation process has been completed and the FAA has taken final action to implement these operational procedures.

3. Federal Research and Development Technology

As is the case with most fields of technology, continuing research and development on aircraft noise is necessary to insure that advances in the state-of-the-art are available for each successive

generation of aircraft. Historically, there has been a ten-year lag in the aircraft industry between demonstration of new technology in the laboratory and the appearance of that technology in commercial airplanes. For example, the present generation of quieter wide-body airplanes, such as the 747, DC-10 and L-1011, which began to enter commercial service in 1970, applied quieter technology of the high-bypass ratio engine developed about 1960. Similarly, more advanced engine quieting technology, which is being developed today, cannot realistically be expected to enter commercial service for at least five to six years.

Aircraft noise is generated primarily by two major sources in the engines: the external turbulent jet exhaust and the internal compressors and combustion process. High-bypass ratio engines, such as the Pratt and Whitney JT9D, the General Electric CF-6 and the Rolls Royce RB-211 now used on the 747, L-1011 and DC-10 aircraft, reduce the primary jet exhaust velocity and thus reduce its noise. At the same time, improved sound absorbing materials in the nacelle surrounding the engine absorb much of the internal noise produced by the compressors and the combustion process. Current technology in new engines, such as the Pratt and Whitney JT10D, and the General Electric CFM56, show potential for further reductions in engine noise levels through improved designs of the internal compressors which, if combined with more efficient wing design, and more effective control surfaces (flaps, spoilers, etc.) will require less engine thrust for safe flight, thereby providing further noise reductions.

It is expected that the technology for use in the next generation of commercial airplanes should provide further significant reductions below current noise standards. These will be evaluated carefully in considering both the applicability and scheduling of lower level requirements, such as proposed in NPRM 76-22.

A recent NASA analysis* has shown quite clearly that substantial long-term (through the year 2000) reductions in noise, fuel consumption, and aircraft emissions are achievable through the development and introduction of more advanced technology than that currently available. Realization of potential advantages through the extensive use of composite materials to reduce airframe weight, stability augmentation to reduce drag, and improved performance of advanced-technology engines such as the prop-fan will depend on the research and development necessary to demonstrate these factors. Such features can become available for service in the late 1980s, assuring continuing progress in aircraft quieting along with fuel economy, cleaner operation, and greater productivity.

* "Cost/Benefit Tradeoffs for Reducing the Energy Consumption of Commercial Air Transportation," NASA CR-137877, June 1976.

The federal government will continue to sponsor and support aviation research and development, in cooperation with the aviation industry. As engine noise levels are reduced, the aerodynamic noise from airflow over and around the airframe itself and its necessary appendages, especially at low altitudes, when flaps and landing gear are extended, may become the major approach noise source. Research on this noise source to determine how it may best be reduced is now underway and will continue.

D. Protecting the Airport Environment

There are over 13,000 public airports operated in the United States today and they vary considerably in size, proximity to populated areas and function as well as in the type and volume of operations. For example, only about 500 airports are fully certificated* by the FAA, while another 500 have limited certificates. Only 437 airports have an FAA air traffic control tower. American airports are also the busiest in the world; 84 airports have a total of over 200,000 annual operations,** while 160 airports have 150,000 or more annual operations. Busy airports are not only found in the larger metropolitan areas; while 244 airports have 100,000 or more annual operations, of these only 151 are located in large or medium hubs.*** Most of these operations are general aviation; only the top ranked 24 airports each have 100,000 or more annual air carrier operations.

The variety of airports in the United States demonstrates that an airport noise reduction strategy cannot be completely generalized. The problem must be approached on an airport-by-airport basis, and all levels of government and the private sector should act with the recognition that solutions to the noise problem must be designed to meet the needs of a particular airport environment.

* Under section 612 of the Federal Aviation Act, 49 U.S.C. 1432, the FAA issues operating certificates to airports served by Civil Aeronautics Board certificated air carriers that the FAA finds "properly and adequately equipped and able to conduct a safe operation."

** An operation is a takeoff or a landing; a flight thus consists of two operations, one takeoff and one landing.

*** A "hub" is defined by the FAA as a city in a standard metropolitan statistical area, as defined by the Bureau of the Census, requiring air service.

1. The Airport Proprietor's Responsibility

Substantial benefits will be achieved through federal actions to abate source noise and control operational flight procedure and airspace, but much of the noise problem is airport-specific and must be addressed by individual proprietors. Noise impact at any airport is in part due to local decisions on airport location, continuation of airport operations on a particular site, the layout and size of and airport and the purchase of buffer areas for noise abatement purposes. It is local decision-making that permits residential development near an airport. For these reasons, the Supreme Court concluded that proprietors are liable for aircraft noise damages. In addition, airport proprietors, particularly those that are public agencies, generally encourage more service to their airports in Civil Aeronautics Board route proceedings.

The need for local action is apparent. Without effective land use planning, the implementation of land use plans and zoning, the benefits achievable from federal source noise reduction requirements could be greatly reduced. Where land use controls have not been imposed, the need for substantial airport land acquisition has increased, and as aircraft operations increase, the need for land acquisition as well as its cost will rise unless source noise levels are reduced.

The airport proprietor is closest to the noise problem, with the best understanding of both local conditions, needs and desires, and the requirements of the air carriers and others that use his airport. The proprietor must weigh the costs the airport and the community must pay for failure to act, and consider those costs against any economic penalties that may result from a decision to limit the use of the airport through curfews or other restrictions for noise abatement purposes.

FAA officials have and will continue to work with and assist airport operators and representatives of communities affected by airport noise to encourage the development of compatible land use controls. What constitutes appropriate land use control action depends on the proprietor's jurisdiction to control or influence land use. This, of course, varies with airport location. Almost all airport proprietors, however, are public agencies with a voice in the affairs and decisions of their respective communities. In some instances they have land use control jurisdiction and are required to document how they will exercise it before receiving federal airport development funds. In other instances, where they lack such direct control,

before receiving federal airport development funds they are required to demonstrate that they have used their best efforts to assure proper zoning or the implementation of other appropriate land use controls near the airport and will continue to do so. Although the airport proprietor may not have zoning authority, he is often the local party in the best position to assess the need for it and to press the responsible officials into action.

2. State and Local Government Responsibility

State and local governments are directly and uniquely responsible for ensuring that land use planning, zoning, and land development activities in areas surrounding airports is compatible with present and projected aircraft noise exposure in the area. They should work closely with airport proprietors in planning actions to be taken in confining serious aircraft noise exposure to within the airport boundary and reducing the number of people seriously affected by airport noise.

State and local governments should support airport land use acquisition programs developed by airport proprietors. As federal noise source regulations shrink the contours of cumulative noise exposure, local governments concurrently should develop complementary land use plans preventing residential development and other incompatible land use in areas adjacent to the airport. Now that the federal government has defined a program extending the application of Part 36 standards, the local authorities will be able to plan effectively on the basis of a reasonable set of assumptions about the shrinkage in noise contours that will occur as a result of the federal action.

State and local governmental agencies can improve the insulation of housing, schools, community facilities, institutions providing health services and public buildings in areas exposed to serious airport noise. To date, such action would have been prohibitively costly. To achieve a 3 to 7 dBA reduction in the level of noise heard inside buildings by insulation would currently cost \$1.9 billion nationwide, while a reduction of 8 to 12 dBA would cost \$3.8 billion, and a reduction of 13 to 16 dBA would cost \$7.2 billion. Given a federal program to require compliance with Part 36, a housing insulation program becomes more manageable and far less expensive. State and local governments should therefore develop appropriate programs to insulate public buildings and to finance insulation by private residents. In this regard, the Department is under a mandate in the Airport

and Airway Development Act of 1976 to study the feasibility, practicality, and cost of insulating schools, hospitals, and public health facilities near airports and report legislative recommendations by July 1977. Local regulations should require proper insulation in the construction of new buildings and insulation of public and residential buildings. State and local governments should help finance the sound insulation of schools, hospitals, libraries, and other noise-sensitive public buildings.

Where appropriate, state and local governments should consider the development of new airport sites so that dense population areas will not be exposed to excessive noise and develop the necessary ground transportation to make them accessible. They should also require that notice of airport noise exposure be given to the purchasers of real estate and to prospective residents in areas near airports so that they will be aware of the problem. Finally, they should support improvements at existing airports which would help reduce the noise impact on surrounding communities.

3. Federal Support for Airport Proprietor and Local Government Noise Abatement Activities

The FAA has long encouraged planning to assure not only that airports will be adequate to provide the service required in the future but that prospective noise impacts are evaluated and minimized. In the past this FAA policy has been implemented through three principal methods involving the Airport Development Aid Program (ADAP).

First, under section 16 of the Airport and Airway Development Act, the Secretary may approve a project only if he is satisfied that it is "reasonably consistent" with the plans of planning agencies for the development of the area in which the airport is located. A project may not be approved unless "fair consideration has been given to the interest of communities in or near where the project may be located." The Act further declares as national policy that the projects involving airport location, runway location or a major runway extension shall "provide for the protection and enhancement of the natural resources and the quality of environment of the Nation," and provides that when an airport or runway location or major runway extension will have adverse environmental effect, it may not be approved unless "no feasible and prudent alternative exists and that all possible steps have been taken to minimize such adverse effect." In addition, section 18(4) of that Act provides that among the conditions precedent to project approval are:

appropriate action, including the adoption of zoning laws, has been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations, including landing and takeoff of aircraft.

While the FAA does not and, in our judgment, should not have the power to control land use around airports throughout the United States, the grant of federal funds for airport development has been and will continue to be conditioned on the application of the foregoing principles.

Second, the FAA has awarded ADAP funds for the development of airport Master Plans. These plans contain an environmental analysis and planning elements to assure that the airport's noise impact is kept to a minimum.

Third, the recent Airport and Airway Development Act Amendments of 1976 (P.L. 94-353) authorize for the first time the use of federal airport development funds on projects designed to achieve noise relief. Specifically, section 11 of the Act now authorizes federal financing of land acquisition to insure compatibility with airport noise levels and the acquisition of noise suppression equipment. We will also seek an amendment of that Act which would authorize the use of ADAP funds for the purchase of noise monitoring equipment.

For the most part, these provisions have led the FAA to concentrate on noise abatement efforts in the context of capital investment. Less attention and financial commitment has been devoted by the federal government to the development by airport proprietors of broader and more comprehensive noise abatement plans. The increase in public concern about the airport noise problem now requires that affirmative federal action be taken beyond the evaluation of airport construction projects. Therefore, FAA is initiating a pilot project to encourage the preparation of comprehensive noise abatement plans by airport proprietors through the planning grant program of the Airport and Airway Development Act.

In formulating this policy to provide a financial incentive for airport noise abatement planning, FAA gave consideration to other alternatives including (1) requiring preparation of such plans by all airports certificated under section 612 of the Federal Aviation Act; (2) requiring the preparation of such plans by the busiest airports in the United States (for example, the top 100

airports by the number of operations); (3) requiring preparation of such plans as a prerequisite to imposition of an airport use restriction by FAA-certificated airports; (4) requiring preparation of such plans as a condition of awarding ADAP funds; and (5) encouraging preparation of such plans and review by FAA without providing federal financial support for this purpose. Although we are still open to further suggestions and comments, these proposals to make airport noise planning mandatory, or a condition of ADAP funding, or a prerequisite to the imposition of use restrictions by an airport proprietor were not adopted at this time because we have not had sufficient experience with this type of noise abatement planning by many airports that either may not have serious noise problems or may have already performed a comparable analysis*. Moreover, we strongly believe that airport proprietors have the incentives, the capacity, and the responsibility to undertake comprehensive noise abatement planning when it is needed, without detailed and duplicative federal oversight. We strongly urge them to do so. We will support them in this effort and provide technical and financial assistance where possible.

The FAA pilot comprehensive noise abatement planning program will have the following elements. Each year, to the extent that funds are available, FAA will award grants for not more than 25 plans on the basis of criteria including the quality of the proposal, the gravity of the noise problem afflicting the applicant airport and the likelihood that the development of such a plan will lead to the implementation of practicable noise abatement techniques of general value and applicability.

The objective of this policy is to promote a planning process through which the airport proprietor can examine and analyze the noise impact created by the operation of his airport as well as the costs and benefits associated with various selected alternative noise reduction techniques, individually and/or in combination. FAA personnel will support and cooperate with this effort through consideration of actions which they can take to reduce noise impacts.

Although FAA has not prescribed particular performance requirements for noise abatement plans funded under this program, the goal of the airport noise planning process should be to eliminate insofar as possible severe aircraft noise exposure and to reduce as much as possible significant aircraft noise exposure in communities adjacent to airports. The objective of airport noise

* In reaching this conclusion, the FAA considered public comments received in response to the July 9, 1975, notice (40 F.R. 28844) and testimony at public hearings held in 25 cities throughout the nation on Airport Noise Policy.

plans prepared under this policy should be to develop noise reduction techniques which, to the maximum extent feasible, confine severe aircraft noise exposure levels, levels of 40 NEF or more, to areas included within the airport's boundary. For areas adjacent to an airport exposed to significant aircraft noise levels of 30 NEF or more, the objective of the airport noise plan should be to develop noise reduction techniques that to the extent possible would confine the area exposed to this level of noise to the airport boundary or land actually being used or which can reasonably be expected to be used in a way compatible with these noise levels.

The Environmental Protection Agency was provided draft copies of this Policy Statement, and a number of informal discussions were held on the FAA's proposed airport policy as it was being developed. The EPA has advised FAA that it considers the FAA's policy a step forward in this area, although it believes further steps are necessary. On October 26, 1976, EPA proposed a regulation under section 611 of the Federal Aviation Act that would require all airports in the United States serving certificated air carriers to develop airport noise abatement plans by July 1979. These plans, developed according to a common methodology and with extensive public participation, would be submitted to the FAA. Unless disapproved by the FAA, each plan would become a part of the airport's operating certificate issued under section 612 of the Act. The EPA proposal, like ours, has as its objective the bringing together of all interested parties with their respective authorities and obligations, thereby facilitating the creation of an agreed-upon abatement plan especially suited to the individual airport location. The EPA proposal has been sent to the Federal Register for publication, and will be the subject of public hearings on January 17 and 18, 1977. On the basis of these hearings and other analysis, the FAA will determine what revisions of the airport policy enunciated in this document are necessary, if any.

In developing an airport noise control plan, the airport proprietor may wish to consider the following categories of action:

- a. Actions that the airport proprietor can implement directly:
 - (1) location of engine run-up areas;
 - (2) time when engine run-up for maintenance can be done;
 - (3) establishment of landing fees based on aircraft noise emission characteristics or time of day.

- b. Actions that the airport proprietor can implement directly if he has authority, or propose to other appropriate local authorities:
 - (1) plan and control of land use adjacent to the airport by zoning or other appropriate land use controls, such as utility expenditures and the issuance of building permits;
 - (2) enact building codes which require housing and public buildings in the vicinity of airports to be appropriately insulated; and
 - (3) require appropriate notice of airport noise to the purchasers of real estate and prospective residents in areas near airports.
- c. Actions that the airport proprietor can implement directly in conjunction with other appropriate local authorities and with financial assistance from the FAA, where appropriate:
 - (1) acquire land to insure its use for purposes compatible with airport operations;
 - (2) acquire interests in land, such as easements or air rights, to insure its use for purposes compatible with airport operations;
 - (3) acquire noise suppressing equipment, construction of physical barriers, and landscape for the purpose of reducing the impact of aircraft noise; and
 - (4) undertake airport development, such as new runways or extended runways, that would shift noise away from populated areas or reduce the noise impact over presently impacted areas.
- d. Actions that the airport proprietor can propose to FAA for implementation at a specific airport as operational noise control procedures:
 - (1) a preferential runway use system;
 - (2) preferential approach and departure flight tracks;
 - (3) a priority runway use system;
 - (4) a rotational runway use system;

- (5) flight operational procedures such as thrust reduction or maximum climb on takeoff;
 - (6) higher glide slope angles and glide slope intercept altitudes on approach; and
 - (7) displaced runway threshold.
- e. Actions an airport proprietor can establish, after providing an opportunity to airport users, the general public and to FAA to review and advise:
- (1) restrictions on the use of or operations at the airport in a particular time period or by aircraft type, such as:
 - (a) limiting the number of operations per day or year;
 - (b) prohibiting operations at certain hours - curfews;
 - (c) prohibiting operation by a particular type or class of aircraft; and
 - (2) any combination of the above.
- f. Actions an airport proprietor can propose to an airline:
- (1) Shifting operations to neighboring airports.
 - (2) Rescheduling of operations by aircraft type or time of day.

The existence, operation and development of an airport provides a service to and is interrelated with both the local community and airport users. These are also the parties who would be most directly affected by the airport operator's noise control plan. We therefore consider it vital that these parties have the opportunity to take part in the planning process. As a condition of FAA noise abatement planning grants, the airport proprietor will be required to provide for reasonable public notice of the plan and provide an opportunity for public participation in the development of the proposed plan. Public notice should describe the plan, the actions proposed, the reasons why these actions are proposed, alternative courses of action considered and why these alternatives were rejected. The FAA also encourages other means of involving the public, both formal and informal, to ensure meaningful public participation in the process.

The FAA will maintain communications with all airports involved in noise abatement planning -- whether or not FAA-funded -- and provide technical advice on the current state-of-the-art in airport noise reduction planning methods that have been successfully used throughout the country. This will include technical information regarding noise reduction and land use planning and guidance on procedures that airports may choose to consider in developing their plans. The FAA and other federal agencies, such as the Department of Housing and Urban Development and the Environmental Protection Agency, may suggest technical methodologies and criteria for land use compatibility that airports and affected local units of government may choose to utilize in their noise reduction planning. Federally funded model noise abatement plans will be monitored and evaluated. Information about successful noise abatement techniques will be disseminated by the FAA to all interested airport proprietors. The FAA will evaluate the model noise abatement planning program as well as the EPA proposal of October 26, 1976, to the FAA and the public comments on it at the conclusion of twenty-four months in order to determine whether broader noise abatement planning requirements should be encouraged or required.

4. FAA Review of Proprietary Use Restrictions

While the airport proprietor is best situated to judge the local noise problem and to determine how to respond to it, he is not always in the best position to judge the impact of his noise reduction proposal on the national and international air transportation systems. Because of the intricacy of those systems, use restrictions at a single airport could, under certain circumstances, cause wide-spread disruption throughout those systems. Pursuant to the general federal interest in the free flow of interstate and foreign commerce, the constitutional principle that states and local entities may not impose undue burdens even where Congress or federal agencies have not acted, and the specific FAA responsibility for regulating the air navigation system, the federal government has the obligation to assure that airport proprietor actions to meet local needs do not conflict with national and international purposes. The proprietor's obligations to refrain from imposing an undue burden on interstate or foreign commerce or discriminating unjustly, and to avoid potential conflicts with the FAA's control of airspace and air traffic, are not difficult to articulate as matters of principle but very difficult to apply to a given factual situation.

As noted above in the discussion of FAA's program to fund airport noise abatement plans, airport proprietors may propose so-called "use restrictions" or "operating procedures" as the

solution to an aircraft noise problem. Operating procedures, by their very nature, require implementation by the FAA. Indeed, the FAA, on its own initiative, has investigated and applied a number of operating procedures aimed at noise abatement, and has several others under consideration. In the future, where an airport proprietor proposes operating procedures to the FAA as a means of achieving noise relief, the FAA will review them to determine if they may be implemented without creating a safety hazard or significantly affecting the efficient use and management of the navigable airspace. If they are acceptable, the FAA will adopt and take appropriate steps to implement them.

The decision to propose a use restriction rests initially with the airport proprietor. It is expected that airport proprietors will consult and review such proposals with all the air carriers, other airport users and the FAA before any use restrictions are established. Here it is the role of the FAA to review those use restriction proposals and provide advice to the airport proprietor on his proposed actions. By this advice, the FAA will attempt to ensure that uncoordinated and unilateral restrictions at various individual airports do not work separately or in combination to create an undue burden on interstate or foreign commerce, unjustly discriminate or conflict with FAA's statutory regulatory authority.

For these reasons, all airport proprietors serving scheduled air carriers should apprise the Federal Aviation Administrator of their proposal to impose an airport use restriction. Such notification should be made a reasonable time in advance of the date the restriction is to go into effect. In all cases, notification of a proprietary use restriction should occur after and be accompanied by a detailed description of the alternative noise reduction techniques the proprietor has considered and the reasons supporting the adoption of the restriction in question instead of any other alternatives. The FAA will review all such use limitations submitted, advise the airport proprietor if it believes the limitation in question is or is not unjustly discriminatory or detrimental to the national air transportation system.

This review procedure is vital to the maintenance of harmonious relations between airport operators, air carriers and the FAA. By giving the FAA timely notification of use restrictions, supported by a thorough analysis of the alternative courses that have been considered, airport proprietors can assure FAA support, which may be necessary to administer the restriction in question successfully and which will prove valuable in any litigation which may ensue. If litigation over use restrictions does occur, the FAA will in appropriate cases ask the Justice Department to intervene or file amicus curiae in support of use

restrictions it considers valid. On the other hand, an airport proprietor that imposes a use restriction without analyzing alternatives and consulting with FAA cannot expect FAA to provide expert advice or to support its policies. The FAA will not endorse any proposed use restriction that has not had prior review, including public and airport user review as well as FAA review, nor will it recognize as valid any such restrictions that as a result of FAA review are considered to be unjustly discriminatory or a significant disruption of the air transportation system of the United States. In the latter case, the United States may institute or support litigation challenging an unacceptable use restriction.

E. Private Sector Responsibility

Air Carriers are responsible for assuring that the required portion of their operating fleets meet Part 36 noise levels within the time period required by federal regulations. Within that period it is also the carriers' responsibility to assure that an efficient and effective noise reduction plan is established that covers the retirement or retrofit of aircraft not meeting Part 36 as well as the operation of those aircraft in a manner designed to minimize their impact on noise sensitive communities. To this end, air carriers should attempt to schedule the operations of noncomplying airplanes into airports that do not have noise problems.

Air carriers can enter into agreements with airport operators to minimize the impact of aircraft noise through limitations on aircraft use. These agreements, in certain cases, will be subject to FAA review and advice. The carriers should also fly their airplanes on schedules utilizing appropriate noise abatement operating procedures designed to minimize noise impacts.

Air travelers generally should bear the cost of noise reduction, consistent with sound economic principle and federal policy of internalizing the adverse environmental consequences in the price of a service or product.

Residents and prospective residents in areas surrounding airports should seek to understand the noise problem and what steps can reasonably be taken to minimize its effect on people. Recognizing that individual and community responses to aircraft noise differ substantially and that for some individuals, the reduced level of noise resulting from the implementation of this policy may not eliminate the annoyance or irritation. Prospective residents considering moving into airport and noise impacted areas should be aware of the effect of noise on their quality of life.

CONCLUSION

Aircraft noise abatement is a complex and controversial issue. In the wealth of information about the subject and midst the labyrinth of jurisdictional responsibilities, there are a few simple thoughts that should not be forgotten. In a society in which we are making rapid strides to improve the quality of life for all of our people, the continuing annoyance and irritation of excessive aircraft noise is an unwarranted intrusion upon the lives of some six million Americans. The federal government remains committed to taking all technologically feasible and economically reasonable actions to reduce excessive aircraft noise at its source and, working with airport proprietors, to reduce its impact on people.

It is clear, however, that the only successful attack that can be launched on this problem is one that involves the cooperative participation of all levels of government--state, federal and local--as well as airport operators, air carriers, aeronautical manufacturers, and airport neighbors. Only if each of these parties performs all the functions for which it is uniquely suited will we achieve significant and lasting progress in reducing both the number of people exposed to serious levels of aircraft noise and the severity of noise exposure for each and every American.

Although federal action to reduce the noise levels of operating aircraft has been long in coming, we hope that the time has enabled us to develop a policy which will work and will result in less noise exposure over the longer term as well as provide immediate relief. By the actions set forth in this policy, including those directed by the President, we are exercising those federal responsibilities that the Congress has required of us. We have set forth a federal action plan for the future so that other essential parties in the noise reduction effort can take complementary action and make their plans with a clear understanding of what the federal government has done and intends to do. Finally, we have set forth what we believe to be the responsibilities of other parties--airport operators, industry and local government--since the effectiveness of the federal action we take today is contingent on what these other parties do.

We thus invite these other parties to consult with us about their plans and proposals, to suggest innovative ways of meeting the noise problem in their communities, and to tell us how we can do our job more effectively. In turn, we will not hesitate to advise local governments and airport proprietors that they must exercise control over land use development and acquire additional land around airports to ensure that the national objective of confining severe aircraft noise to within the airport boundary is achieved. Nor will we hesitate to inform the air carriers and aeronautical manufacturers what this policy requires of them.

Working together, in the spirit of close cooperation and open communication, we will bring about quieter skies for all American citizens.

IMPACT OF NOISE ON PEOPLE

How people perceive loudness or noisiness of any given sound depends on several measurable physical characteristics of the sound. These factors are:

- a. Intensity - a ten decibel increase in intensity is considered a doubling of the perceived loudness or noisiness of a sound;
- b. Frequency content - sounds with concentration of energy between 2,000 Hertz and 8,000 Hertz are perceived to be more noisy than sounds of equal sound pressure level outside this range;
- c. Duration - the perceived loudness of a sound will increase with its duration. An increase in duration by a factor of 10 results in a change that is roughly equivalent to 10 decibels or an increase in noisiness by a factor of two;
- d. Changes in sound pressure level - sounds that are increasing in level are judged to be somewhat louder than those decreasing in level;

- e. Rate of increase of sound pressure level - impulsive sounds, ones reaching a high peak very abruptly, are usually perceived to be very noisy.

The task of quantifying the environmental impact of noise associated with any noise source requires the application of statistics and averages. This approach is necessary because individual human response to noise is subject to considerable natural variance. Over the past 25 years researchers have identified many of the factors which contribute to the variation in individual human reaction to noise.

Knowledge of the existence of these individual variables helps to understand why it is not possible to state simply that a given noise level from a given noise source will elicit a particular community reaction or have a particular environmental impact. Research in psychoacoustics has revealed that an individual's attitudes, beliefs and values may greatly influence the degree to which a person considers a given sound annoying. The aggregate emotional response of an individual has been found to depend on:

- a. Feelings about the necessity or preventability of the noise. If people feel that their needs and concerns are being ignored, they are more likely

to feel hostility towards the noise. This feeling of being alienated or of being ignored and abused is the root of many human annoyance reactions. If people feel that those creating the noise care about their welfare and are doing what they can to mitigate the noise, they are usually more tolerant of the noise and are willing and able to accommodate higher noise levels.

- b. Judgment of the importance and of the value of the primary function of the activity which is producing the noise.
- c. Activity at the time an individual hears a noise and the disturbance experienced as a result of the noise intrusion. An individual's sleep, rest and relaxation have been found to be more easily disrupted by noise than his communication and entertainment activities.
- d. Attitudes about environment. The existence of undesirable features in a person's residential environment will influence the way in which he reacts to a particular intrusion.
- e. Belief concerning the effect of noise on health.

- f. General sensitivity to noise. People vary in their ability to hear sound, their physiological predisposition to noise and their emotional experience of annoyance to a given noise.
- g. Feeling of fear associated with the noise. For instance, the extent to which an individual fears physical harm from the source of the noise will affect his attitude toward the noise.

A number of physical factors have also been identified by researchers as influencing the way in which an individual may react to a noise. These other factors include:

- a. Type of neighborhood - instances of annoyance, disturbances and complaint associated with a particular noise exposure will be greatest in rural areas, followed by suburban and urban residential areas, and then commercial and industrial areas in decreasing order.
- b. Time of day - a number of studies have indicated that noise intrusions are considered more annoying at night than during the day.

- c. Season - noise is considered more disturbing in the summer than in the winter. This is understandable since windows are likely to be open in the summer and recreational activities take place out of doors.
- d. Predictability of the noise - research has revealed that individuals exposed to unpredictable noise have a lower noise tolerance than those exposed to predictable noise.
- e. Control over the noise source - a person who has no control over the noise source will be more annoyed than one who is able to exercise some control.
- f. Length of time an individual is exposed to a noise - there is little evidence supporting the argument that annoyance resulting from noise will decrease with continued exposure, rather, under some circumstances, annoyance may increase the longer one is exposed.

Aircraft Noise Indices

There are two basic schemes for quantifying the noise associated with aircraft operations. One method considers the noise generated by all aircraft over a cumulative twenty-four hour

period, while the other quantifies the sound levels of a single aircraft measured at various points on the ground during the takeoff and landing. Both methods involve acoustical frequency and time dependent weightings of the basic sound pressure level data.

A number of cumulative noise exposure techniques have been developed in the United States, including a Noise Exposure Forecast (NEF), Composite Noise Rating (CNR), Day/Night Sound Level (Ldn), and Aircraft Sound Description System (ASDS).*

The primary noise metric used in the EIS is NEF, based on the Effective Perceived Noise Levels in units of EPNdB. The NEF analysis involves construction of contours which link together points of equal cumulative noise exposure. The contours are generated by a computer technique based on the following input data: airport flight patterns, number of daily aircraft operations by type of aircraft and weight and time of day,

*There are equivalencies among the various cumulative noise indices. Any given NEF is equivalent to Ldn minus 35, plus or minus 3. For example, NEF 30 is approximately equal to Ldn 65. Between NEF and CNR there is a non-linear relationship. The general equivalencies are shown below (Ref. 1).

| | | | | | | |
|--------|---|---------|---|--------|---|--------|
| NEF 20 | = | CNR 85 | = | NNI 22 | = | Ldn 55 |
| NEF 30 | = | CNR 100 | = | NNI 38 | = | Ldn 65 |
| NEF 40 | = | CNR 115 | = | NNI 56 | = | Ldn 75 |

noise characteristics of each aircraft in terms of EPNL during takeoff and landing and typical runway utilization patterns in terms of percentage of use.

It is important to keep in mind the assumptions and limitations when comparing sound levels of different aircraft at any given point. The difference in sound levels between two aircraft under comparison will not usually be the same at different locations on the ground. This reflects the differences in their rates of climb, climb gradients, flight paths, thrust settings, and acoustical spectra.

In order to convey the intensity and relative impact of single event noise in A-weighted levels, Table I describes typical dBA values of noise commonly experienced by people.

Quantifying Human Response to Noise

The inherent variability in the way individuals react to noise makes it impossible to predict accurately how any one individual will respond to a given noise. However, considering the community as a whole, trends emerge which relate noise to annoyance. In this way it is possible to correlate a noise index (cumulative or single event) with community annoyance. This index will represent the average annoyance response for the community.

TABLE I
Comparative Noise Levels

Typical decibel (dBA) values encountered in daily life and industry

| | <u>dBA</u> |
|--|------------|
| Rustling leaves | 20 |
| Room in a quiet dwelling at midnight | 32 |
| Soft whispers at 5 feet | 34 |
| Men's clothing department of large store | 53 |
| Window air conditioner | 55 |
| Conversational speech | 60 |
| Household department of large store | 62 |
| Busy restaurant | 65 |
| Typing pool (9 typewriters in use) | 65 |
| Vacuum cleaner in private residence (at 10 feet) | 69 |
| Ringing alarm clock (at 2 feet) | 80 |
| Loudly reproduced orchestral music in large room | 82 |

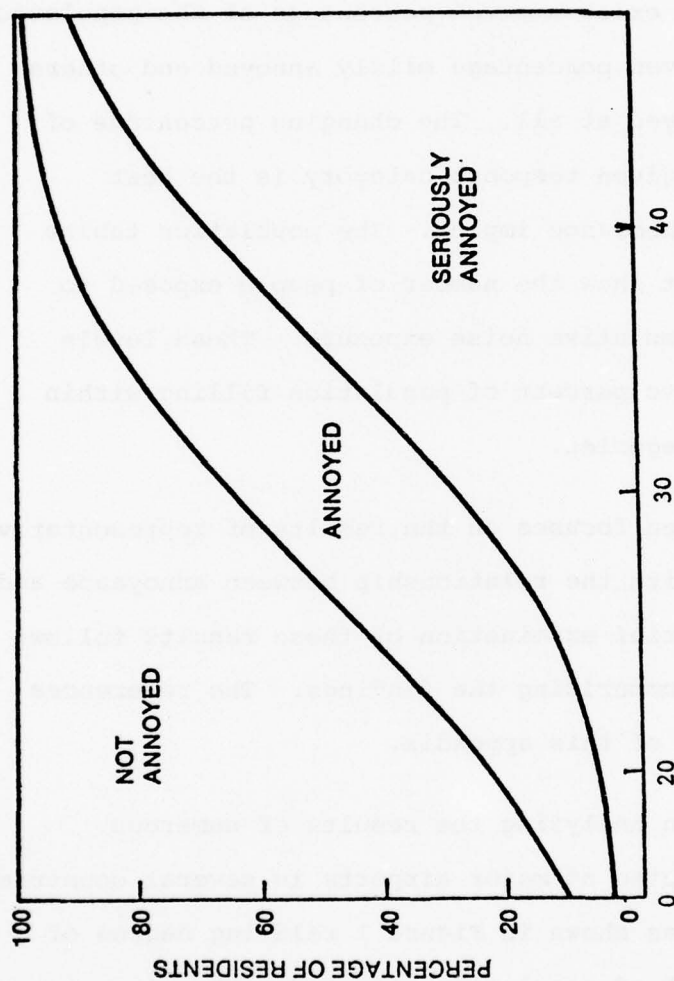
Over 85 dBA, beginning of hearing damage if prolonged

| | |
|---|-----|
| Printing press plant (medium size automatic) | 86 |
| Heavy city traffic | 92 |
| Heavy diesel-propelled vehicle (about 25 feet away) | 92 |
| Air grinder | 95 |
| Cut-off saw | 97 |
| Home lawn mover | 98 |
| Turbine condenser | 98 |
| 150 cubic foot air compressor | 100 |
| Banging of steel plate | 104 |
| Air hammer | 107 |
| Jet airliner (500 feet overhead) | 115 |

In utilizing data relating any given measure of noise level or exposure to average community annoyance it is important to note that there will exist a given percentage of the population highly annoyed, a given percentage mildly annoyed and others who will not be annoyed at all. The changing percentage of population within a given response category is the best indicator of noise annoyance impact. The population tables contained in the text show the number of people exposed to various levels of cumulative noise exposure. These levels are in turn related to percent of population falling within various response categories.

The ensuing discussion focuses on the results of representative research concerned with the relationship between annoyance and noise exposure. A brief examination of these results follows along with a table summarizing the findings. The references cited are at the end of this appendix.

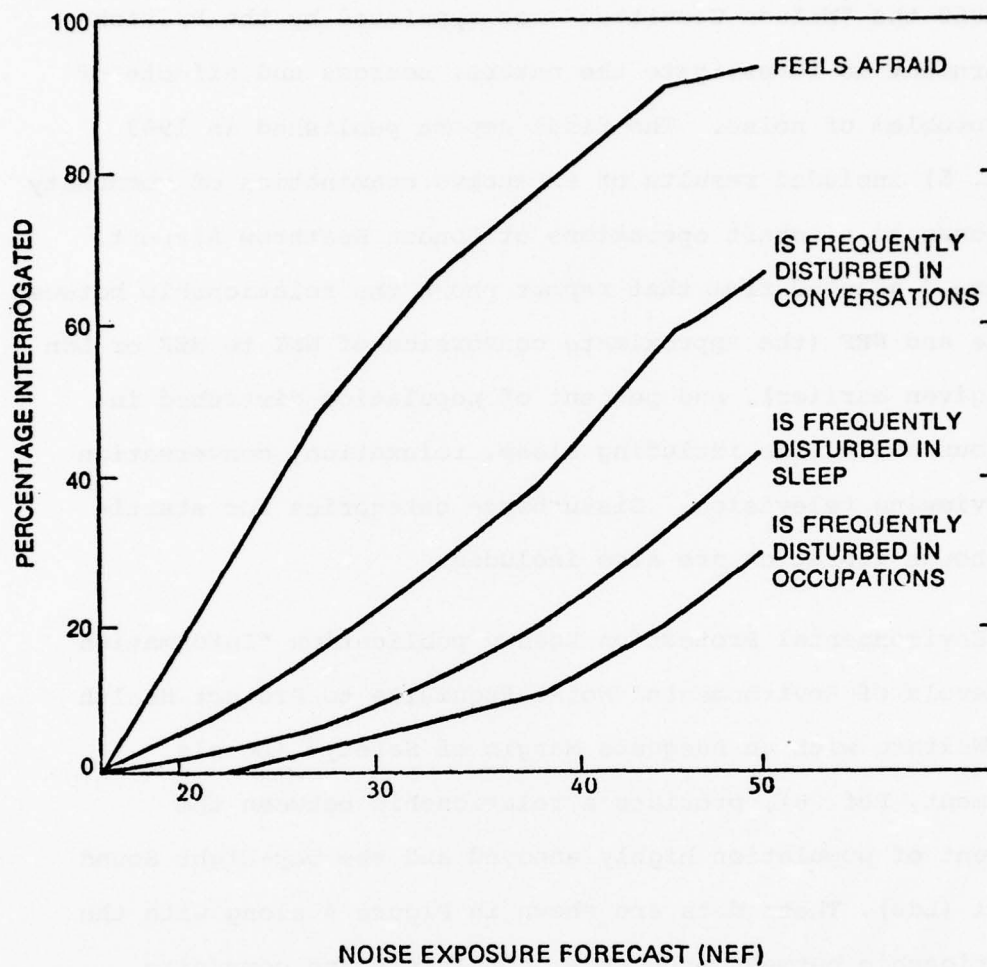
Ollerhead (Ref. 1) in analyzing the results of numerous social surveys conducted at major airports in several countries has derived the curves shown in Figure 1 relating degree of annoyance and percent of population affected with noise exposure expressed in NEF. A survey conducted in the Netherlands (Ref. 4) investigated the relationship between the CNR (an approximate conversion of NEF is shown) and the percentage of those questioned who suffered feelings of fear, disruption of conversation, sleep or work activities (Figure 2).



NOISE EXPOSURE FORECAST (NEF)

ANNOYANCE CAUSED BY AIRCRAFT NOISE IN
RESIDENTIAL COMMUNITIES NEAR MAJOR AIRPORTS

Figure 1



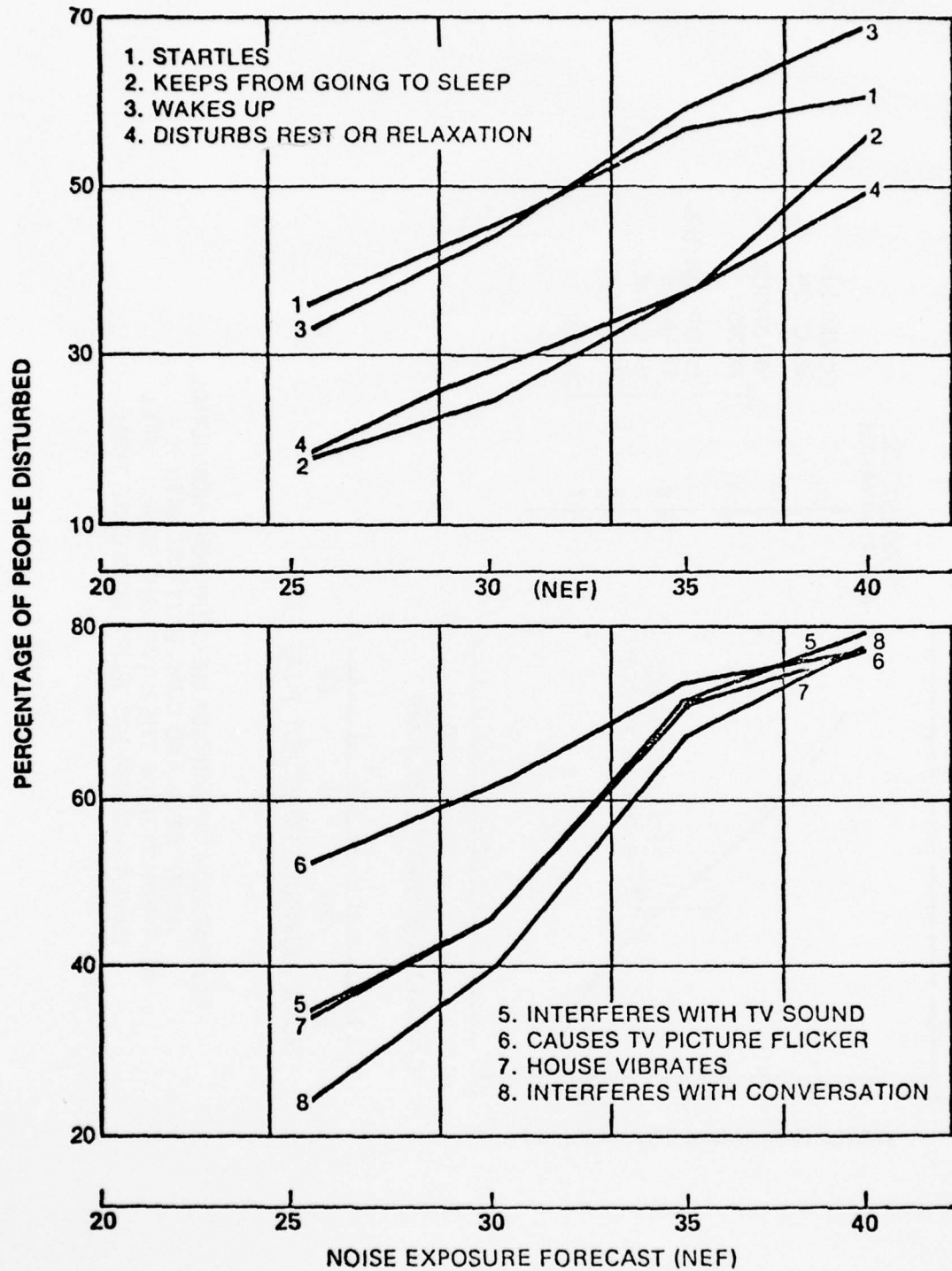
COMMUNITY RESPONSE TO AIRCRAFT NOISE-NETHERLANDS SURVEY

Figure 2

In 1960 the "Wilson Committee" was appointed by the British Government to investigate the nature, sources and effects of the problem of noise. The final report published in 1963 (Ref. 5) included results of extensive examination of community response to aircraft operations at London Heathrow Airport. Figure 3 adapted from that report shows the relationship between noise and NEF (the approximate conversion of NNI to NEF or Ldn was given earlier), and percent of population disturbed in various activities including sleep, relaxation, conversation and viewing television. Disturbance categories for startle and house vibration are also included.

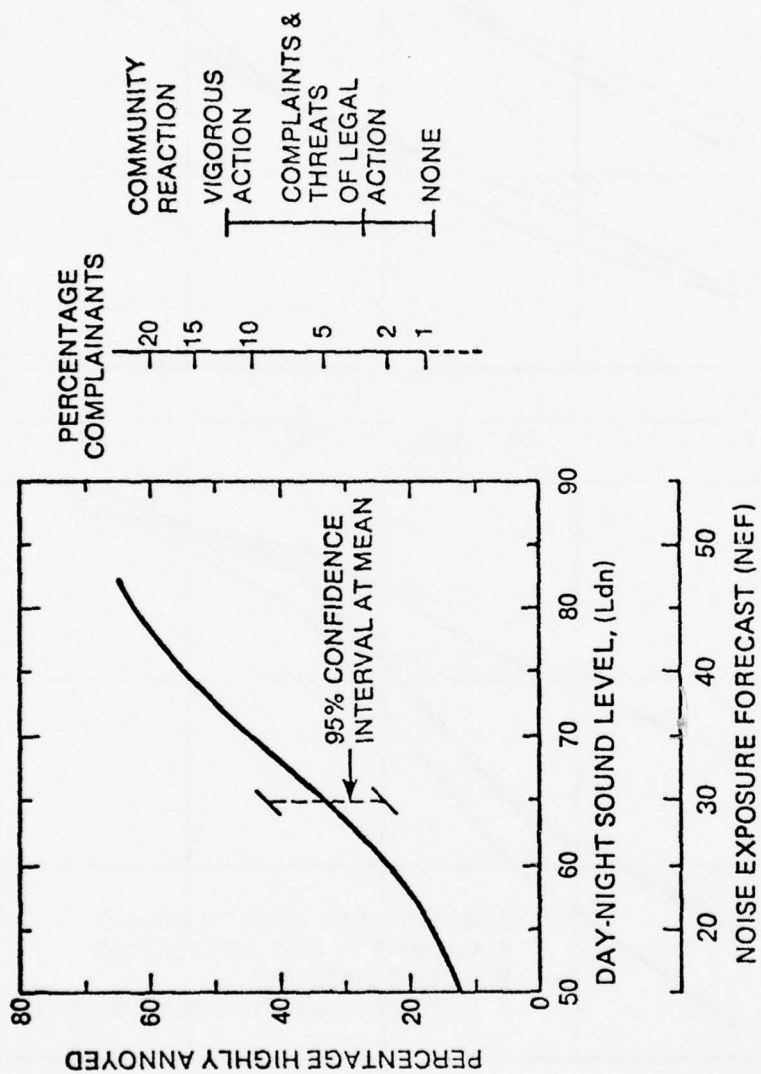
The Environmental Protection Agency publication "Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety" (Levels Document, Ref. 6), provides a relationship between the percent of population highly annoyed and the Day-Night Sound Level (Ldn). These data are shown in Figure 4 along with the relationship between annoyance, complaints and community reaction.

The EPA "Levels Document" describes the relationship between speech interference and Day-Night Sound Levels as shown in Figure 5. In going from NEF 30 to NEF 40 there is an increase in speech interference of nearly 90% outdoors. Indoor interference does not begin to appear until the NEF 35 level is reached.



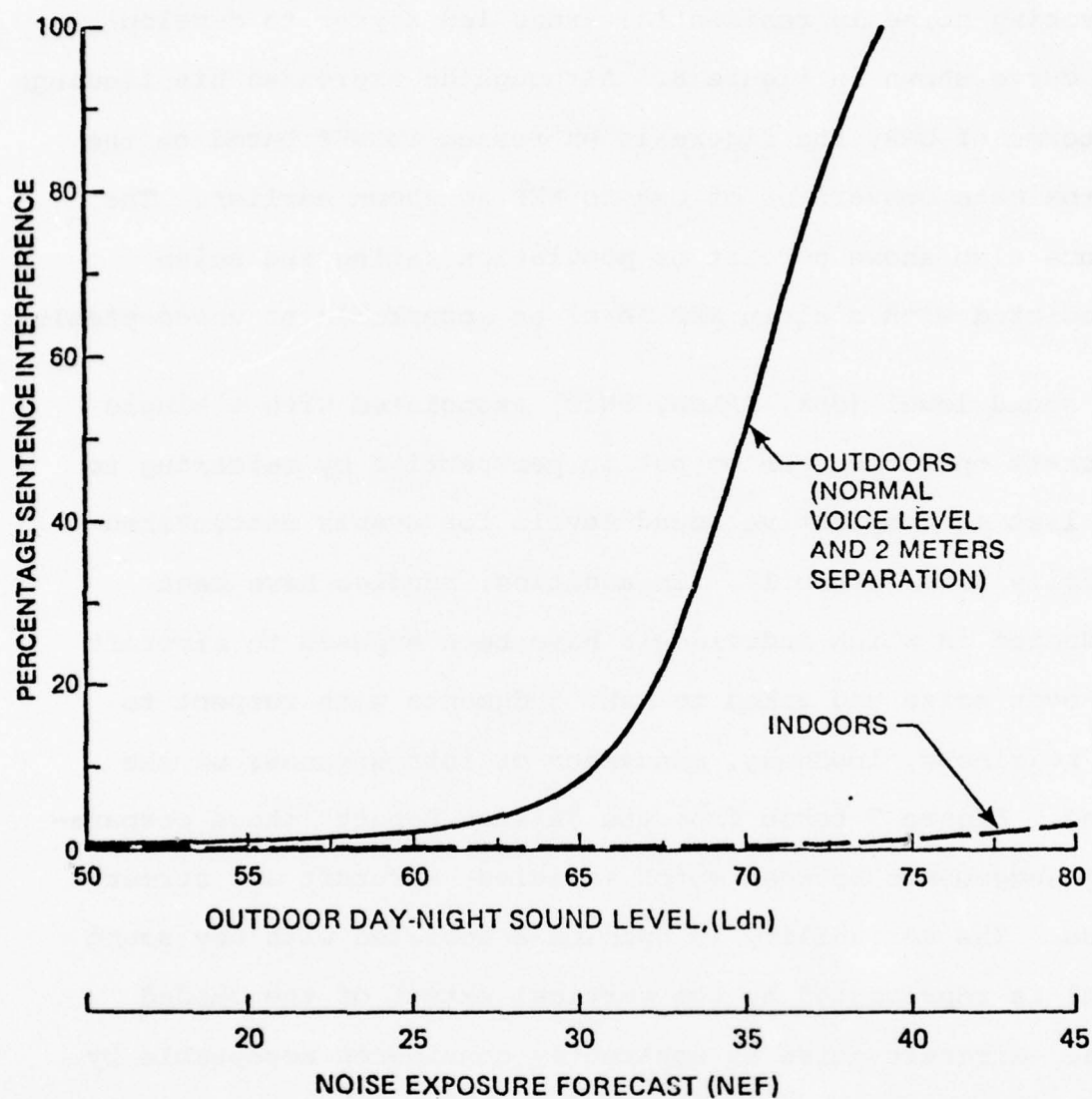
COMMUNITY RESPONSE TO AIRCRAFT OPERATIONS - LONDON HEATHROW AIRPORT

Figure 3



COMPARISON OF VARIOUS MEASURES OF INDIVIDUAL ANNOYANCE AND COMMUNITY REACTION AS A FUNCTION OF THE DAY-NIGHT SOUND LEVEL (Ldn) AND NOISE EXPOSURE FORECAST (NEF)

Figure 4

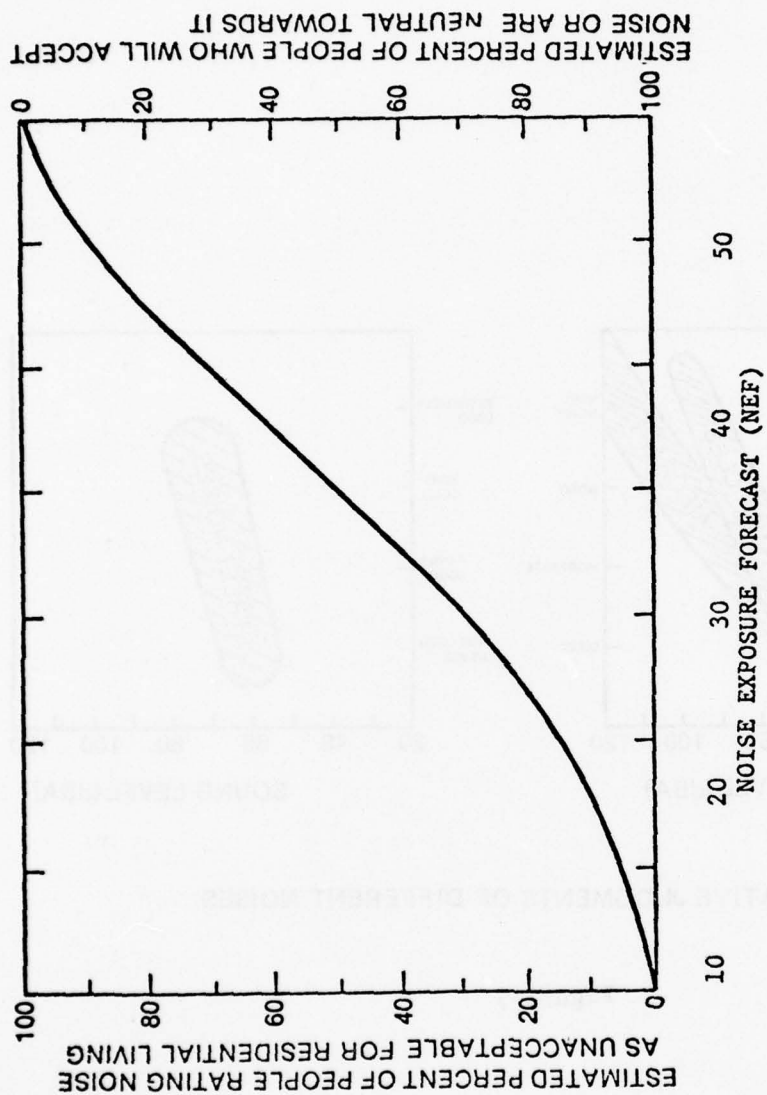


MAXIMUM PERCENTAGE INTERFERENCE WITH SENTENCES AS A FUNCTION OF THE DAY-NIGHT NOISE LEVEL. (PERCENTAGE INTERFERENCE EQUALS 100 MINUS PERCENTAGE INTELLIGIBILITY, AND L_{dn} IS BASED ON $L_{day} + 3$)

Figure 5

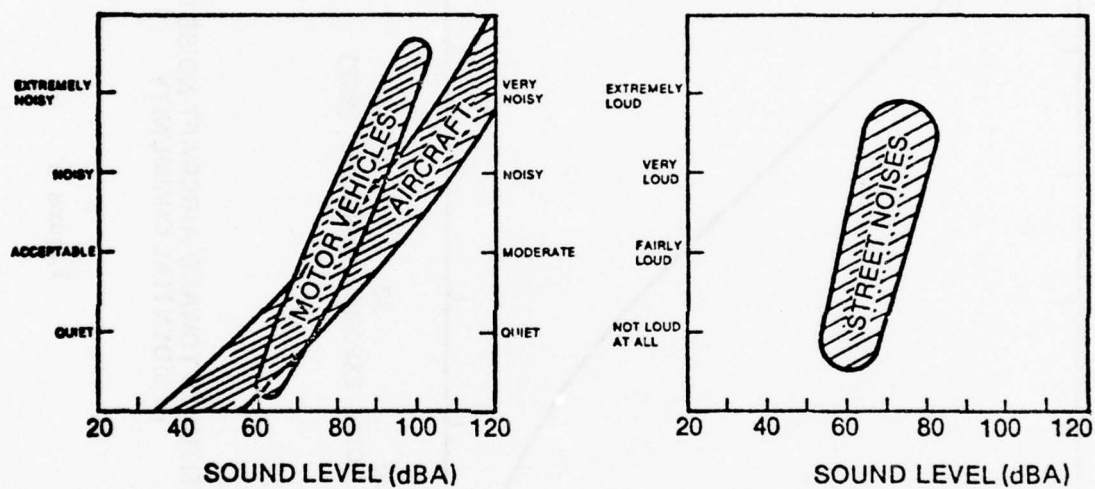
An investigation of attitudes to be expected from non-fear provoking noise in residential areas led Kryter to develop the curve shown in Figure 6. Although he expressed his findings in terms of CNR, the figure is expressed in NEF based on the approximate conversion of CNR to NEF as shown earlier. The figure also shows percent of population rating the noise associated with a given NEF level as acceptable or unacceptable.

The sound level (dBA, EPNdB, PNdB) associated with a single aircraft operation can be put in perspective by referring to the list of comparative sound levels for events encountered in daily life (Table I). In addition, studies have been conducted in which individuals have been exposed to aircraft fly-over noise and asked to make judgments with respect to the noisiness, loudness, annoyance or intrusiveness of the sound. Figure 7 taken from the "Wilson Report" shows comparative judgements between motor vehicles, aircraft and street noise. The variability in opinion associated with any sound level is represented by the vertical extent of the shaded area. Aircraft noise is apparently considered acceptable by some segment of the population at higher levels than those of other noise sources. Other data from the "Wilson Report" shown in Figures 8 and 9 relate dBA sound levels to ratings of intrusiveness and noisiness. A summary of that data is provided in Table II.



ATTITUDES TOWARD AIRCRAFT NOISE IN THE
RESIDENTIAL COMMUNITY

Figure 6



COMPARATIVE JUDGMENTS OF DIFFERENT NOISES

Figure 7

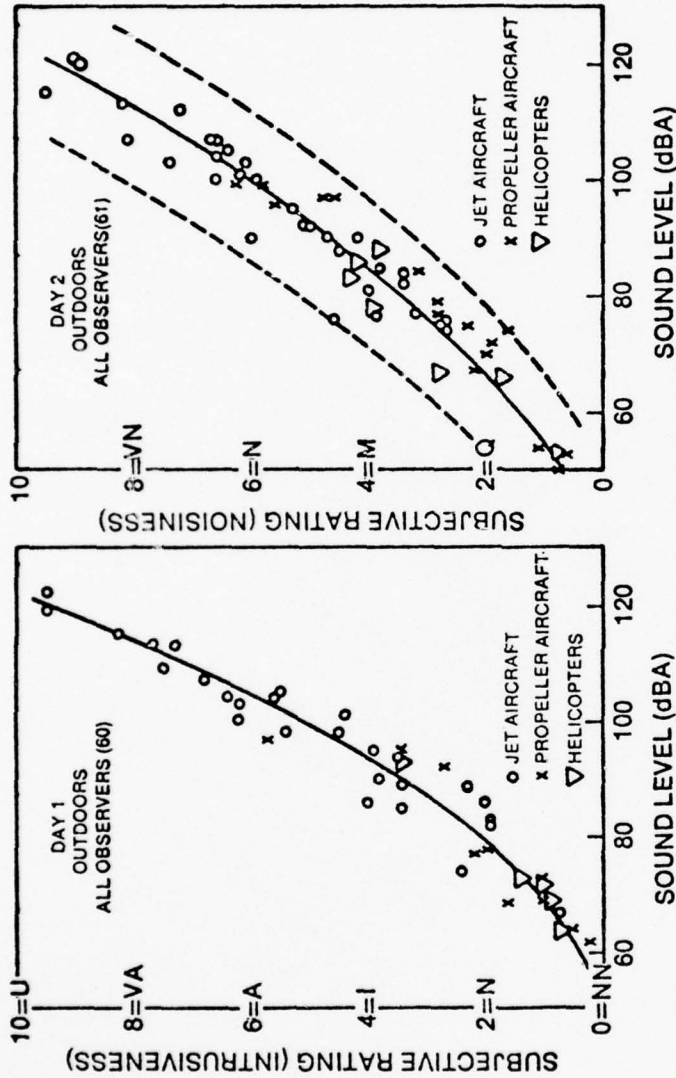


Figure 8

OUTDOOR JUDGMENTS ON THE
CATEGORY SCALE OF INTRUSIVE-
NESS PLOTTED AGAINST SOUND
LEVEL A

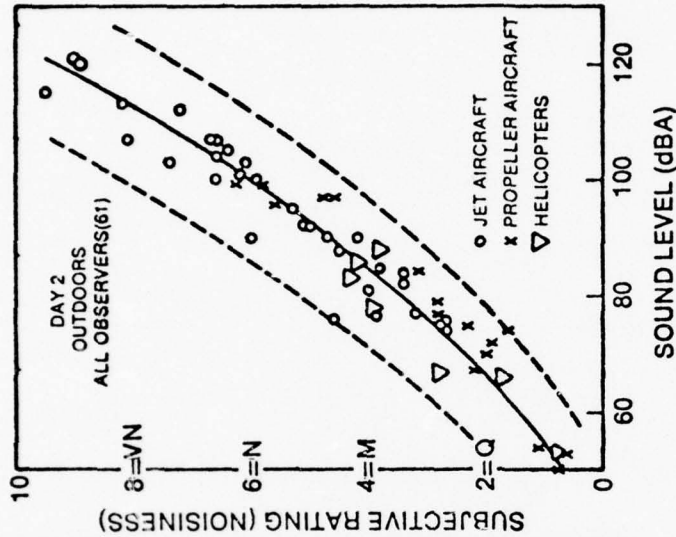


Figure 9

OUTDOOR JUDGMENTS ON THE
CATEGORY SCALE OF NOISINESS
PLOTTED AGAINST SOUND LEVEL A

| dBA | EPNdB | PNdB* | FIG. 31 | FIG. 32 | FIG. 33 |
|-----|-------|-------|------------------------------|-----------------------------|--------------------|
| 120 | 133 | 131 | EXTREMELY NOISY - VERY NOISY | UNBEARABLE | - |
| 110 | 123 | 121 | NOISY - VERY NOISY | VERY ANNOYING - ANNOYING | NOISY - VERY NOISY |
| 100 | 113 | 111 | NOISY | ANNOYING - INTRUSIVE | MODERATE - NOISY |
| 90 | 103 | 101 | MODERATE/ACCEPTABLE - NOISY | INTRUSIVE - NOTICEABLE | MODERATE |
| 80 | 93 | 91 | QUIET - MODERATE/ACCEPTABLE | NOTICEABLE | QUIET - MODERATE |
| 70 | 83 | 81 | QUIET | NOTICEABLE - NOT NOTICEABLE | QUIET |
| 60 | 73 | 71 | | NOT NOTICEABLE | |

* ASSUMING PNdB IS APPROXIMATELY
EPNdB MINUS 2

RELATIONSHIP BETWEEN SINGLE EVENT AIRCRAFT NOISE LEVEL AND SUBJECTIVE RESPONSE

TABLE II

AD-A039 465

GREINER ENVIRONMENTAL SCIENCES INC BALTIMORE MD
ENVIRONMENTAL ASSESSMENT OF AIRPORT DEVELOPMENT
MAR 77

F/G 1/5
ACTIONS. APPEND--ETC(U)
DOT-FA-75WA-3703
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A039 465



Existing Noise Criteria

Table III summarizes the relationship between various indicators of community annoyance and several cumulative noise indices. It also illustrates the point made earlier that a valid indicator of noise impact is the changing percentage of population associated with a given response category.

The Department of Transportation (DOT) has established Noise Standards and Procedures for use by State highway agencies and the Federal Highway Administration (FHWA) in the planning and design of highways (Ref. 7). Table IV shows the L_{10} values (the DBA levels exceeded 10% of the time for a 24 hour period) considered by FHWA as compatible with various land use categories.

The Department of Housing and Urban Development has published Noise Abatement and Control Standards (Circular 1390.2, August 4, 1971 - Ref.8) to encourage land utilization patterns for housing and other municipal needs. These standards are intended to separate uncontrollable noise sources from residential and other noise sensitive areas, and prohibit HUD

| ANNOYANCE RESPONSE CATEGORIES | | | | | | | | | | | | | | | | | |
|-------------------------------|-----------------|--------------------|--------------------------------------|-----------|---------------|-------------------|------------------------------------|---|---------------------|------------|----------------------------|------------|---|---|-----------------------------------|------------------------------|---|
| NEF | L _{dn} | ASDS | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O |
| 20 | 55 | APPROX. 1 MINUTE | 5% | 20% | 75% | 17% | 5% | 1% | 0% | 25% | 10% | 20% | 5% | 22% | 41% | 20% | 8% |
| 30 | 65 | 2 MINUTES | 27% | 38% | 35% | 55% | 21% | 8% | 4% | 45% | 25% | 44% | 28% | 45% | 61% | 45% | 39% |
| 40 | 75 | APPROX. 40 MINUTES | 69% | 25% | 6% | 80% | 43% | 22% | 16% | 60% | 56% | 69% | 50% | 79% | 78% | 78% | 79% |
| | | | PERCENT OF POPULATION: | | | | | | | | | | | | | | |
| | | | PERCENT OF POPULATION: | | | | | PERCENT OF POPULATION: | | | | | PERCENT OF POPULATION: | | | | |
| | | | A-SERIOUSLY ANNOYED | B-ANNOYED | C-NOT ANNOYED | D-EXPRESSING FEAR | E-EXPERIENCING SPEECH INTERFERENCE | F-EXPERIENCING SLEEP INTERRUPTION | G-DISTURBED AT WORK | H-STARTLED | I-KEPT FROM GOING TO SLEEP | J-AWAKENED | K-DISTURBED WHILE RESTING OR RELAXING | L-INDICATING INTERFERENCE WITH TV SOUND | M-INDICATING PICTURE TUBE FLICKER | N-INDICATING HOUSE VIBRATION | O-EXPERIENCING INTERFERENCE WITH CONVERSATION |
| | | | (FIG. 25/ REF. 21) | | | | | | | | | | | | | | |
| | | | P-PER-CENTAGE HIGHLY ANNOYED | | | | | Q-% SPEECH INTELLIGIBILITY | | | | | R-PERCENT RATING NOISE AS UNACCEPTABLE | | | | |
| | | | (FIG. 26/REF. 24) | | | | | (FIG. 27/REF. 25) | | | | | (FIG. 32/REF. 24) | | | | |
| | | | S-PERCENT RATING NOISE AS ACCEPTABLE | | | | | T-INDICATING INTERFERENCE WITH TV SOUND | | | | | U-INDICATING PICTURE TUBE FLICKER | | | | |
| | | | V-INDICATING HOUSE VIBRATION | | | | | W-EXPERIENCING INTERFERENCE WITH CONVERSATION | | | | | X-INDICATING INTERFERENCE WITH CONVERSATION | | | | |
| | | | (FIG. 26/REF. 24) | | | | | (FIG. 26/REF. 24) | | | | | (FIG. 26/REF. 24) | | | | |
| | | | •USING EQUIVALENCIES | | | | | NEF 20 = CNR 85 | | | | | NEF 30 = CNR 100 | | | | |
| | | | | | | | | NEF 40 = CNR 115 | | | | | | | | | |

RELATIONSHIP BETWEEN CUMULATIVE NOISE LEVEL AND INDICATORS OF COMMUNITY ANNOYANCE

FHWA

DESIGN NOISE LEVEL/LAND USE RELATIONSHIPS

| Design Noise Level - L 10 | Description of Land Use Category |
|---------------------------------|---|
| 60 dBA (Exterior) | Tracts of lands in which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheatres, particular parks or portions of parks, or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. |
| 70 dBA (Exterior) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreation areas, playgrounds, active sports areas, and parks. |
| 75 dBA (Exterior) | Developed lands, properties or activities not included in categories A and B above. |
| 55 dBA (Interior) | Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums. |

support for new construction on sites having unacceptable noise exposure. Set out below are the HUD criteria for funding new residential construction.

| <u>RATING</u> | <u>DISPOSITION IN HUD</u> |
|------------------|---------------------------|
| less than 30 NEF | Acceptable |
| 30 to 40 NEF | Discretionary |
| more than 40 NEF | Unacceptable |

The Environmental Protection Agency has also identified noise levels considered requisite to protect health and welfare with an adequate margin of safety. Table V summarizes the EPA findings in terms of Ldn. (As mentioned above, the difference between Ldn and NEF is approximately 35 - e.g., Ldn 65 equals NEF 30).

TABLE V
SUMMARY OF NOISE LEVELS IDENTIFIED AS REQUISITE TO
PROTECT PUBLIC HEALTH AND WELFARE WITH
AN ADEQUATE MARGIN OF SAFETY
 (Ref. 6)

| Effect | Level | Area |
|---|---------------------|---|
| Hearing Loss | $L_{dn} \leq 74$ dB | All areas |
| Outdoor activity interference and annoyance | $L_{dn} \leq 55$ dB | Outdoors in residential areas and farms and other outdoor areas where people spend widely varying amounts of time and other places in which quiet is a basis for use. |
| | $L_{dn} \leq 59$ dB | Outdoor areas where people spend limited amounts of time, such as school yards, playgrounds, etc. |
| | $L_{dn} \leq 45$ dB | Indoor residential areas |
| Indoor activity interference and annoyance | $L_{dn} \leq 49$ dB | Other indoor areas with human activities such as schools, etc. |

NOTE: All L_{eq} values from Reference 6 converted to L_{dn} for ease of comparison (L_{dn} equals L_{eq} (24) + 4 dB)

A major complaint raised in conjunction with aircraft noise is interference with talking and listening. This effect has been substantiated in numerous studies of noise complaint data. Figure 10 shows the relationship between speaker-listener separation and ambient sound level necessary for speech communication at various noise levels (Ref. 4). The horizontal axis is calculated in a variety of units, rank-ordered from best to worst in terms of predicting speech interference. The PSIL is the average sound pressure level in the octaves centered at 500, 1000 and 2000 Hertz while the SIL takes the average over three octaves from 600 to 4800 Hertz. In Figure 11, the EPA provides a similar format for gauging speech interference. It is important to note that the dBA and SIL (as well as other indices) are not accurate measures of the masking of speech by noise containing intense low frequency components. It has been shown that if a low frequency noise is sufficiently intense it can mask speech completely. For example, a sound pressure level of 115 dB at 50 Hertz will provide a 10 to 30 dB masking effect through 3000 Hertz.

Applying these speech interference criteria (Figures 10 and 11) to aircraft noise, outdoor communication at a distance of

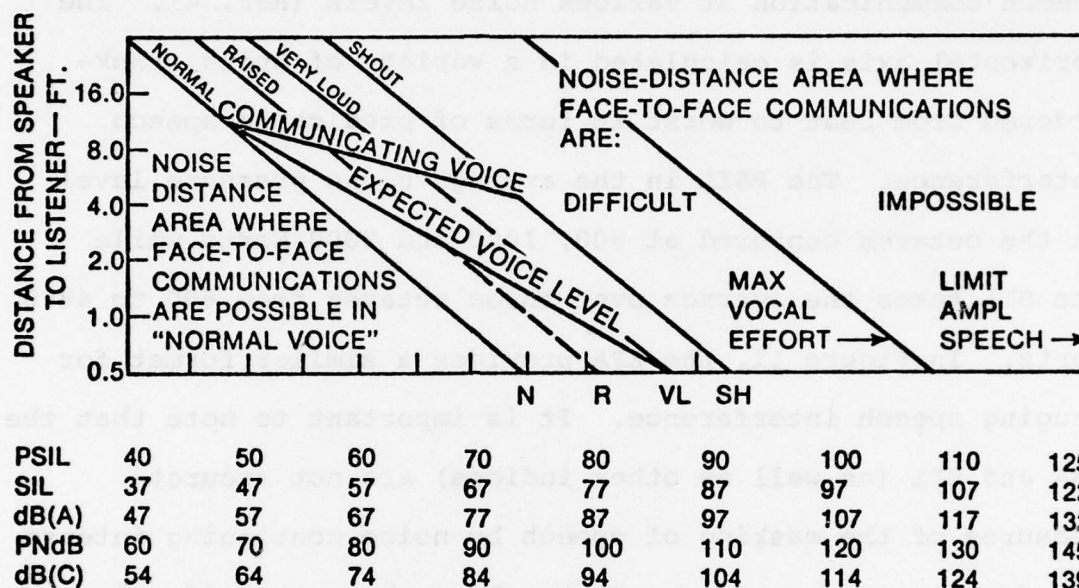
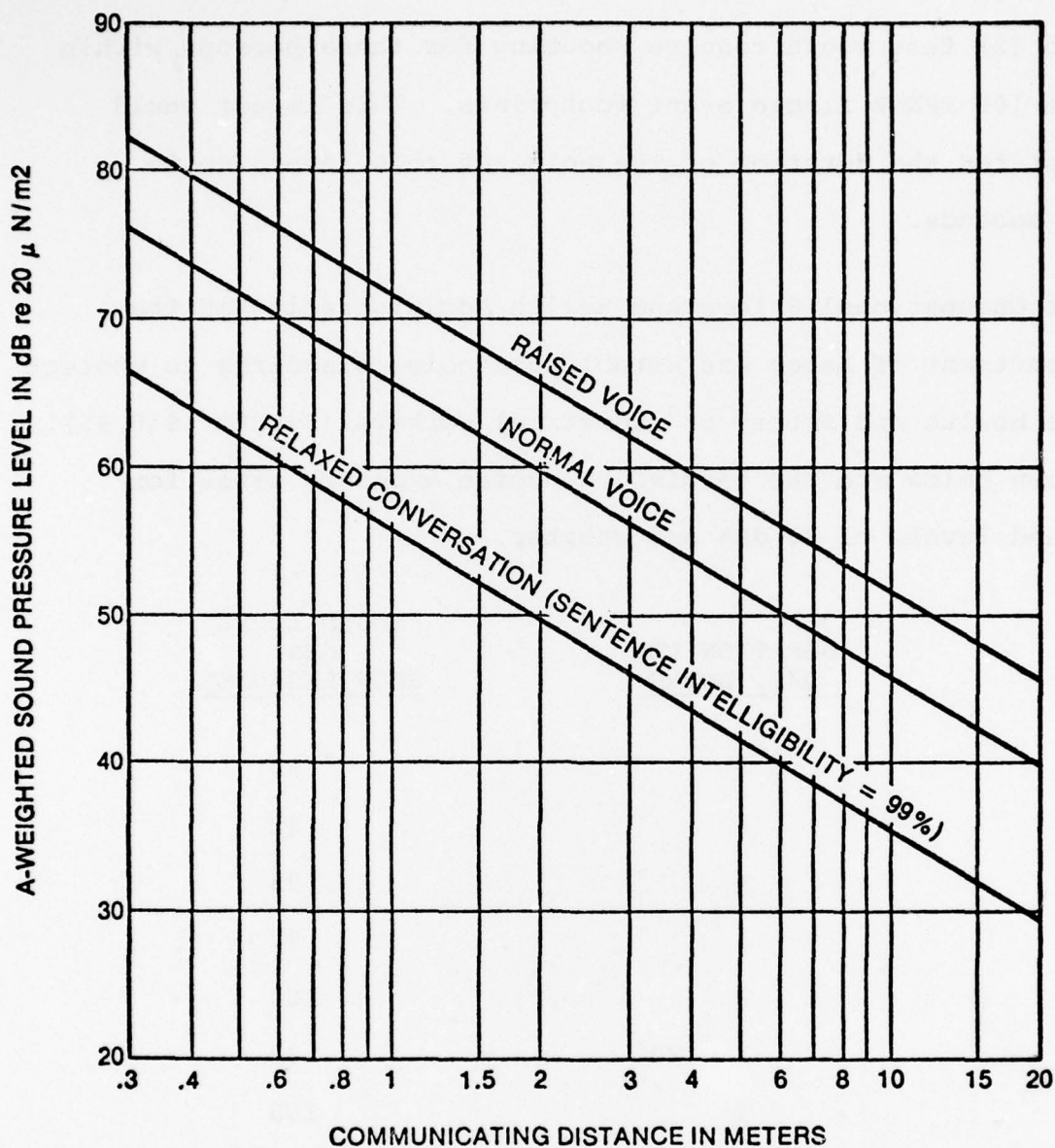


Figure 10



MAXIMUM DISTANCES OVER WHICH CONVERSATION IS CONSIDERED TO BE
SATISFACTORILY INTELLIGIBLE (SENTENCE INTELLIGIBILITY =
95% EXCEPT AS NOTED)

Figure 11

two (2) feet would require shouting for those persons within the 100 EPNdB single event footprints. This impact would last for the duration of the noise at this level, up to 30 seconds.

The Occupational Safety and Health Administration of the Department of Labor has established noise standards to protect the health and safety of industrial workers (29 CFR 1910.95). Shown below are the permissible noise exposure times for sound levels of 90 dBA and greater.

| <u>DURATION PER DAY, HOURS</u> | <u>SOUND LEVEL dBA SLOW RESPONSE</u> |
|------------------------------------|--|
| 8 | 90 |
| 6 | 92 |
| 4 | 95 |
| 3 | 97 |
| 2 | 100 |
| 1 -1/2 | 102 |
| 1 | 105 |
| 1/2 | 110 |
| 1/4 or less | 115 |

EPA has recommended that 85 dBA be established as the level not to be exceeded when an individual is exposed to noise for an eight-hour work day.

Residential structures generally provide 15 to 20 dBA attenuation. Consequently the indoor noise level shown by the 100 EPNdB (85 dBA) contours would be in the range of 65 to 70 dBA. At this level of noise there would be no interference with normal communication at a distance of three (3) feet. At eight (8) feet communication would require a raised voice.

Hearing Damage

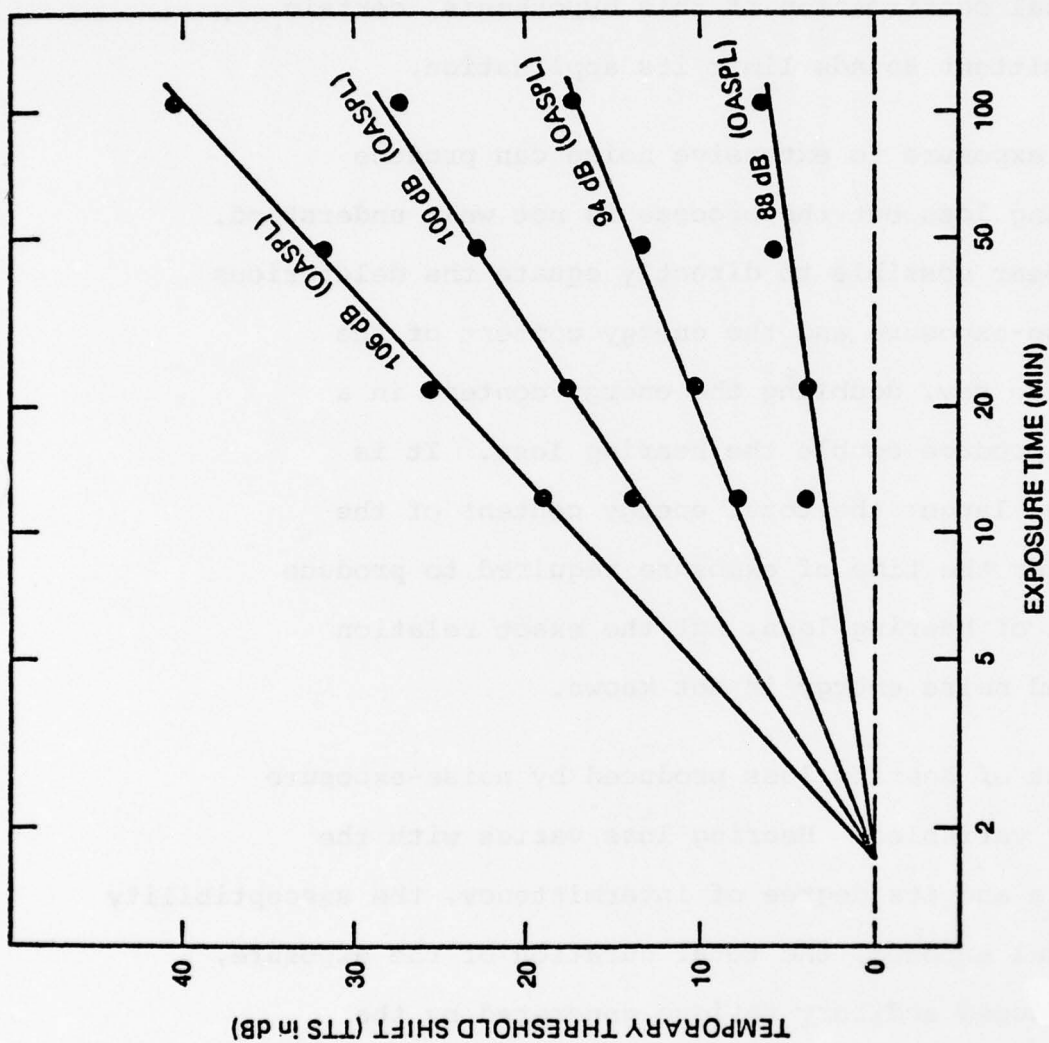
Studies of the temporary auditory threshold shift or temporary hearing loss caused by noise exposure have demonstrated several important facts related to temporary threshold shifts (Ref. 12). Some of those facts are:

1. The temporary elevation of auditory threshold which results from one day of exposure (8 hours) to noise levels of 100 dBA or more may vary from no shift to a temporary 40 dB shift depending on individual susceptibility.
2. Exposure to typical industrial noise produces the largest temporary hearing loss at 4000 to 6000 Hertz.

3. Recovery from temporary or transient hearing loss generally occurs within the first hour or two after the noise exposure has ended.
4. Efforts have been made to predict susceptibility to noise-induced permanent hearing loss on the basis of the amount of temporary threshold shift. A study of the various tests for detecting highly susceptible ears has indicated that there is no test which will predict susceptibility to noise-induced hearing loss.

Figure 12 shows the relationship between a temporary auditory threshold shift (TTS) in terms of level of exposure and exposure time. The "white noise" referred to in Figure 12 is comprised of equal sound pressure levels in each frequency component.

The EPA "Levels Document" discusses a temporary threshold shift hypothesis. This hypothesis states that "a temporary threshold shift measured two minutes after cessation of an eight hour noise exposure closely approximates the Noise Induced Permanent Threshold Shift (NIPTS) incurred after a 10 to 20 year exposure to that same level."



TEMPORARY THRESHOLD SHIFT (TTS) AS A FUNCTION OF EXPOSURE TO
WHITE NOISE (OASPL - OVERALL SOUND PRESSURE LEVEL)

Figure 12

The EPA "Levels Document" also discusses the "Equal Energy Hypothesis." This hypothesis states "that equal amounts of sound energy will cause equal amounts of NIPTS regardless of the distribution of the energy across time." While there is some experimental confirmation of this hypothesis, certain types of intermittent sounds limit its application.

Long continued exposure to extensive noise can produce permanent hearing loss but the process is not well understood. It does not appear possible to directly equate the deleterious effects of noise-exposure and the energy content of the noise. That is to say, doubling the energy content in a noise does not produce double the hearing loss. It is assumed that the larger the total energy content of the noise the smaller the time of exposure required to produce the same amount of hearing loss, but the exact relation between time and noise energy is not known.

The total amount of hearing loss produced by noise-exposure depends on many variables. Hearing loss varies with the type of exposure and its degree of intermittency, the susceptibility of the individual exposed, the total duration of the exposure, and possible induced auditory fatigue generated by the totality of exposure in terms of type, degree and duration.

Other Effects of Noise on Humans

It is important to emphasize that many researchers are not convinced that noise exposure can be correlated to any real medical problem. The New York City Mayor's Task Force on Noise Control (Ref. 9) reported, "To date, virtually no properly designed formal studies have been published, documenting the palpable indirect effects of noise pollution upon man. Although we may again appeal to personal experience, having been aware of fatigue, distraction, irritation or inefficiency ostensibly precipitated by or aggravated by noise, the tangible nature of these effects vanishes as soon as it is pursued in the laboratory or in formal field studies." However, there is still considerable debate as to whether noise can cause health defects of a non-auditory nature.

Many researchers underscore the need for extensive epidemiological noise surveys concerned with the incidences of acute and chronic ailments in different work groups. Whatever correlation there may arguably be between noise and adverse health effects requires far more definite, controlled tests to demonstrate a cause-effect relationship.

Some studies indicate that it is not necessary to be fully awakened by noise to suffer the consequences in terms of physiological fatigue. Research by H. R. Richter concluded that "noise associated with modern civilization and even natural sounds frequently disturb the rest of sleepers without their awareness" (Ref. 10).

After protracted periods of exposure to intense noise, particularly of high frequency, animals have shown marked depletion of adrenal constituents. This indicates that their physiological tolerance or ability to adapt to stressful situations has been exceeded. Under these conditions, gastroduodenal ulcers and other pathological changes in the liver and kidneys are possible. It is plausible to expect similar findings in man, but neither the levels nor the exposure conditions required to exceed human physiological tolerance to noise are known.

Noise has been reported to cause vasoconstriction, fluctuations in arterial blood pressure, and even alterations of some functional properties of cardiac muscle. Vasoconstriction of the small arterioles of the extremities occurs with noise exposures of moderate level (about 70 dB) and can become progressively stronger with increasing noise intensity.

N. N. Skatalou, a Russian scientist who studied 589 factory workers, found effects of noise on cardiovascular systems varied with the type of exposure. Steady or continuous noise resulted in "arterial tension, downward trend in venous pressure and reduced peripheral resistance." Intermittent noise, on the other hand, caused "hypertension, rising arterial pressure and frequent capillary spasms" (Ref. 10).

The views of several physicians concerned with the adverse physiological impact of noise were summarized by Baron (Ref. 2). Dr. G. Jansen found that blood circulation does not adapt to continuing exposure to noise by a return to its initial level. Instead, peripheral blood flow continues to be reduced as a result of continuing vasoconstriction and increased resistance. This phenomenon begins at 60-70 dB and becomes more pronounced as sound intensity increases. Dr. L. E. Farr summarized his views of the effects of noise in the following way: "In disease states such as anxieties, duodenal ulcers and other so-called tension ills, the additive, deleterious effect of noise is real and immediate" (Ref. 2).

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Presidential Documents

Title 3—THE PRESIDENT

Executive Order 11296

EVALUATION OF FLOOD HAZARD IN LOCATING FEDERALLY OWNED OR FINANCED BUILDINGS, ROADS, AND OTHER FACILITIES, AND IN DISPOSING OF FEDERAL LANDS AND PROPERTIES

WHEREAS uneconomic uses of the Nation's flood plains are occurring and potential flood losses are increasing despite substantial efforts to control floods; and

WHEREAS national and regional studies of areas and property subject to flooding indicate a further increase in flood damage potential and flood losses, even with continuing investment in flood protection structures; and

WHEREAS the Federal Government has extensive and continuing programs for the construction of buildings, roads, and other facilities and annually disposes of thousands of acres of Federal lands in flood hazard areas, all of which activities significantly influence patterns of commercial, residential, and industrial development; and

WHEREAS the availability of Federal loans and mortgage insurance and land use planning programs are determining factors in the utilization of lands:

NOW, THEREFORE, by virtue of the authority vested in me as President of the United States, it is hereby ordered as follows:

SECTION 1. The heads of the executive agencies shall provide leadership in encouraging a broad and unified effort to prevent uneconomic uses and development of the Nation's flood plains and, in particular, to lessen the risk of flood losses in connection with Federal lands and installations and federally financed or supported improvements. Specifically:

(1) All executive agencies directly responsible for the construction of Federal buildings, structures, roads, or other facilities shall evaluate flood hazards when planning the location of new facilities and, as far as practicable, shall preclude the uneconomic, hazardous, or unnecessary use of flood plains in connection with such facilities. With respect to existing Federally owned properties which have suffered flood damage or which may be subject thereto, the responsible agency head shall require conspicuous delineation of past and probable flood heights so as to assist in creating public awareness of and knowledge about flood hazards. Whenever practical and economically feasible, flood proofing measures shall be applied to existing facilities in order to reduce flood damage potential.

(2) All executive agencies responsible for the administration of Federal grant, loan, or mortgage insurance programs involving the construction of buildings, structures, roads, or other facilities shall evaluate flood hazards in connection with such facilities and, in order to minimize the exposure of facilities to potential flood damage and the need for future Federal expenditures for flood protection and flood disaster relief, shall, as far as practicable, preclude the uneconomic, hazardous, or unnecessary use of flood plains in such connection.

THE PRESIDENT

(3) All executive agencies responsible for the disposal of Federal lands or properties shall evaluate flood hazards in connection with lands or properties proposed for disposal to non-Federal public instrumentalities or private interests and, as may be desirable in order to minimize future Federal expenditures for flood protection and flood disaster relief and as far as practicable, shall attach appropriate restrictions with respect to uses of the lands or properties by the purchaser and his successors and may withhold such lands or properties from disposal. In carrying out this paragraph, each executive agency may make appropriate allowance for any estimated loss in sales price resulting from the incorporation of use restrictions in the disposal documents.

(4) All executive agencies responsible for programs which entail land use planning shall take flood hazards into account when evaluating plans and shall encourage land use appropriate to the degree of hazard involved.

Sec. 2. As may be permitted by law, the head of each executive agency shall issue appropriate rules and regulations to govern the carrying out of the provisions of Section 1 of this order by his agency.

Sec. 3. Requests for flood hazard information may be addressed to the Secretary of the Army or, in the case of lands lying in the basin of the Tennessee River, to the Tennessee Valley Authority. The Secretary or the Tennessee Valley Authority shall provide such information as may be available, including requested guidance on flood proofing. The Department of Agriculture, Department of the Interior, Department of Commerce, Department of Housing and Urban Development, and Office of Emergency Planning, and any other executive agency which may have information and data relating to floods shall cooperate with the Secretary of the Army in providing such information and in developing procedures to process information requests.

Sec. 4. Any requests for appropriations for Federal construction of new buildings, structures, roads, or other facilities transmitted to the Bureau of the Budget by an executive agency shall be accompanied by a statement by the head of the agency on the findings of his agency's evaluation and consideration of flood hazards in the development of such requests.

Sec. 5. As used in this order, the term "executive agency" includes any department, establishment, corporation, or other organizational entity of the executive branch of the Government.

Sec. 6. The executive agencies shall proceed immediately to develop such procedures, regulations, and information as are provided for in, or may be necessary to carry out, the provisions of Sections 1, 2, and 3 of this order. In other respects this order shall take effect on January 1, 1967.

LYNDON B. JOHNSON

THE WHITE HOUSE,
August 10, 1966.

[F.R. Doc. 66-8338; Filed, Aug. 10, 1966; 12:14 p.m.]

ORDER

FEDERAL AVIATION ADMINISTRATION

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SUBJ: FLOOD PLAIN MANAGEMENT

1. SCOPE. This Order sets forth the policy of the Federal Aviation Administration in the evaluation of flood hazard in locating federally owned or financed buildings, roads, and other facilities.
2. REFERENCES.
 - a. Executive Order 11296, August 10, 1966
3. BACKGROUND. Facility siting criteria and land management directives of the Federal Aviation Administration require a total economic review of agency funded establishment and development programs, and assurance that the optimum geographic locations be selected consistent with operational and technical requirements. Generally, flood hazard was included as an integral part of the economic analysis and not singularly identifiable. In the past, Federal Government losses experienced by insufficiently controlled flood plain utilization have been increasing and have reached the point where an Executive Order has been issued directing special considerations of flood plain hazards in locating federally owned or financed buildings, roads, and other facilities. The Executive Order requires that all requests for appropriations for federal construction of new buildings, structures, roads, or other facilities transmitted to the Bureau of the Budget shall be accompanied by a statement on the findings of the evaluation and consideration of flood hazards in the development of such requests.
4. POLICY. The policy of the Federal Aviation Administration is as follows:
 - a. Evaluate and consider flood hazards when planning the location of federally owned buildings, structures, roads and other facilities and, as far as practicable, preclude the uneconomic, hazardous or unnecessary use of flood plains in connection with such facilities.
 - b. Evaluate and consider flood hazards in connection with the administration of Federal grant-in-aid programs including Federal Aid to Airports in order to minimize the exposure of facilities to potential flood damage.

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- c. Evaluate and consider flood hazards in land use planning for airports and take potential hazards into account when evaluating plans, and encourage land use appropriate to the degree of hazard involved.
 - d. With respect to existing agency owned structures, buildings, roads, and other facilities, currently located on flood plains by operational and technical necessity, consideration shall be given to protecting the facilities from potential flood damage, insofar as is practical and economically feasible.
 - e. With respect to existing agency owned properties which have suffered flood damage or which may be subject thereto, past or probable flood heights shall be clearly marked in order to insure public awareness of and knowledge about flood hazards.
 - f. All requests for appropriations, including reprogramming actions for the construction of new buildings, structures, roads, or other facilities, shall include the statement that full consideration and evaluation of flood hazards were given in the development of the request.
5. IMPLEMENTATION. The heads of all agency offices and services responsible for the siting, leasing, purchasing and/or management of buildings, structures, roads or other facilities, including approval authority of Federal Aid to Airport Grants, shall be responsive to the policy stated herein.
6. FLOOD HAZARD INFORMATION. The Executive Order stated that requests for flood hazard information may be addressed to the Secretary of the Army or, in the case of lands lying in the basin of the Tennessee River, to the Tennessee Valley Authority. Guidance on flood protection may also be obtained from these sources.

D. D. Thomas

D. D. Thomas
Deputy Administrator

U. S. WATER RESOURCES COUNCIL

GUIDELINES

The guidelines with explanatory notes after each one where appropriate are numbered for reference, in about the same order as the problems that arise in preparing for and making a flood hazard evaluation. However, it is best to consider all of the guidelines before following any one of them.

In carrying out their responsibilities under Executive Order 11296, the Federal Executive Agencies should:

(1).....DETERMINE FIRST, WHEN A PROPOSED USE IS EXAMINED, WHETHER THERE IS ANY NEED TO EVALUATE THE FLOOD HAZARD AT THE SITE OR STRUCTURE LOCATION BEING CONSIDERED.

Essentially, this means no more than deciding whether the site or structure may be in a floodplain. Using the Plan Approach, the agency will already have official maps for the area, so that the decision can be made immediately. Using the Case Approach, the agency either makes a brief preliminary investigation (has its experts obtain and examine maps of the area or visit the area) or requests the information from one of the agencies named in Section 3 of the Executive Order, or other appropriate source, before making the decision. If it is decided by the concerned agency that there is a need to evaluate the flood hazard, then the remaining guidelines apply as appropriate.

(2).....CONSIDER BOTH THE "PLAN" AND THE "CASE" APPROACHES FOR A FLOODPLAIN ABOUT TO RECEIVE A FLOOD HAZARD EVALUATION, AND SPECIFY THE CONDITIONS UNDER WHICH ONE OR THE OTHER OF THE APPROACHES IS MORE APPROPRIATE.

The "Plan" and "Case" approaches are described previously in the section title "Evaluation of Flood Hazard".

Before adopting either approach for a particular area, the agency should learn what flood evaluation information is already available, which means not only what Federal agencies may have on hand but

also what State and local governmental agencies may have in their statutes, regulations, ordinances, maps, etc., by going into investigation of data sources further than was done under Guideline 1.

Also, before adopting either approach, the agency should consider its own resources and whether it would be better to make its own evaluation, or whether assistance should be requested from one of the agencies named in Section 3 of Executive Order 11296 or other appropriate source.

(3).....USE THE FOLLOWING TO IDENTIFY AND EVALUATE THE FLOOD HAZARD:

(3A.).....THE 100-YEAR FLOOD AS THE BASIC FLOOD:

(3B.).....THE FLOOD HAZARD ZONE, DEFINED AS THE AREA INUNDATED BY THE BASIC FLOOD:

(3C 1).....IN THE PLAN APPROACH A FLOODWAY, DEFINED AS THE PORTION OF A RIVERINE FLOODPLAIN NEEDED TO CONVEY A BASIC FLOOD, WITH NOT MORE THAN ONE FOOT RISE IN FLOODWATER ELEVATION; OR

(3C 2).....IN THE CASE APPROACH A PROCEDURE TO ASSURE THAT ANY ENCROACHMENT ON THE FLOODPLAIN WILL PERMIT CONVEYANCE OF THE BASIC FLOOD WITHOUT INCREASING FLOOD HEIGHTS OR VELOCITIES TO AN EXTENT WHICH WOULD CAUSE SIGNIFICANT UPSTREAM OR DOWNSTREAM DAMAGE TO EXISTING OR REASONABLY ANTICIPATED FUTURE DEVELOPMENT.

(3D.).....FLOODS GREATER OR LESS THAN THE BASIC FLOOD AS APPROPRIATE.

Basic Flood. The 100-year flood has a magnitude that may be equaled or exceeded once every hundred years, on the average. It is also called the 100-year frequency flood, or the 1 percent chance flood (it has 1 chance in 100 of being equaled or exceeded in any given year), or else it is said to have a 100-year recurrence interval. Other floods having a designated frequency should be similarly treated. In all cases, all of the conditions affecting flows should be a part of the

frequency analysis in determining elevations. The 100-year and other frequency floods are determined by a flood frequency analysis, when flood data are available, as described for riverine flooding in the Water Resources Council's Bulletin 15, "A Uniform Technique for Determining Flood Flow Frequencies". The procedure has been approved and adopted by the Council for use by all Federal agencies in all riverine planning involving water and related land resources. When flood data are inadequate or unavailable, the regional analysis or hydrometeorological method of determining flood magnitude for a given frequency is estimated using flood records from nearby areas. Details of typical methods of regional analysis are given in "Generalization of Streamflow Characteristics", by Thomas and Benson; U.S. Geological Survey, Water Supply Paper 1975; and in "Statistical Methods in Hydrology", by L. R. Beard; U.S. Corps of Engineers. Either the Geological Survey or the Corps of Engineers can furnish information as to whether regional analyses have already been made in order to prevent unnecessary duplication of effort. The Soil Conservation Service can also furnish information on the hydrometeorological method.

Regulatory Principle. In the consideration of the area required to convey the basic flood utilize the Regulatory Principle that all parts of the riverine floodplain are not alike in conveying flood flows, and that the effect of some marginal or other encroachments on the floodplain may be insignificant.

As used for regulatory purposes in the Plan Approach and where floodways have been delineated, the floodway is that portion of the floodplain required to pass a regulatory flood, which equates to a basic flood, with no significant increase in the profile due to marginal confinement or impedance of flow. It is delineated within a framework of assumptions that include the passage of a large flood, such as the basic flood, with the constraint that assumed land filling from the margins of the floodplain would not increase flood heights at any point on the flood profile by a significant amount. A significant amount is generally taken as falling within the range of zero to 1 foot.

In the Case Approach and in the absence of a delineated floodway, which will be the usual case in the near future, the Regulatory Principle should be utilized.

Coastal margins, similarly, should exclude buildings in the areas subject to major wave attack and erosional change which accompany overflow.

Floodway Fringe. The area outside the floodway but still in the flood hazard zone is usually called the "floodway fringe". Developments are permitted providing their elevations where flood damage begins are not below a specified level (See Guideline 11 for an example).

Great Floods. Floods exceeding the 100-year flood have occurred in many areas of the United States. No part of the country is immune from such occurrences, and it has become a standard practice of agencies dealing with flood problems to use a flood greater than the 100-year to indicate what can occur at different locations in a floodplain. The Corps of Engineers in its floodplain information reports uses a "Standard Project Flood" or, for coastal areas, a "Standard Project Hurricane", to show flood depths, greater than the 100-year depths, that could be experienced. The Tennessee Valley Authority uses a "Maximum Probable Flood" in a similar manner in its area of operations, and the Soil Conservation Service uses a similar large magnitude flood in its flood hazard analyses. Inasmuch as floods of this large size are seldom given any particular frequency, they will be referred to as floodplain floods in the guidelines.

(4).....DETERMINE WHETHER THERE ARE EXISTING LAWS OR STATUTES OF THE FEDERAL GOVERNMENT, RULES OR REGULATIONS OF OTHER FEDERAL AGENCIES, OR LAWS, STATUTES, ORDINANCES, ETC., OF STATE OR LOCAL GOVERNMENTS THAT PROVIDE STANDARDS FOR REGULATION OF THE FLOODPLAIN UNDER STUDY. IN CASES WHERE THOSE STANDARDS ARE EITHER MORE STRINGENT THAN THOSE BASED ON THESE GUIDELINES, OR ARE APPLICABLE TO SITUATIONS OR CONDITIONS NOT COVERED BY THESE GUIDELINES, THEY SHOULD BE CONSIDERED FOR THE EVALUATION OF FLOOD HAZARD IN THAT AREA.

By "more stringent" is meant a standard that is more severe or restrictive in order to provide greater safety or to reduce flood hazard more effectively. Federal agencies should support the States and local governments to make their rules, regulations, standards etc. fully effective.

An exception to this guideline involves Federal property listed on the National Register of Historic Places. Such property should not be demolished, modified, or disposed of without first affording the U.S. Advisory Council on Historic Preservation an opportunity to comment on the undertaking; nor should Federal assistance be denied to registered historic places by reason only of their location in a flood hazard zone. The Historic Sites Act of 1935 (Public Law 74-292) and the National Historic Preservation Act of 1966 (Public Law 89-665) provide directives and guidance in these matters.

(5).....DECIDE ON THE CONDITIONS UNDER WHICH AN EVALUATION MUST BE MADE TO DETERMINE THE IMPACTS OF INCLUDING OR EXCLUDING THE USE OF SITE IN A FLOODPLAIN. SUCH EVALUATION MUST DEMONSTRATE CLEARLY THAT THE USE OF THE SITE IS TO THE ADVANTAGE OF SOCIETY AS WELL AS TO THE ADVANTAGE OF THE USER OF SUCH SITE.

The evaluation mentioned in this guideline may be based on an analysis of the beneficial and adverse social, economic, and environmental effects of proposed development in the floodplain as an alternative to the same development outside the floodplain. Economic benefits are not by themselves, sufficient basis for development in the floodplain. It must also be demonstrated that the beneficial effects are of such magnitude and importance to the community as to offset the adverse effects. The standards used in these evaluations will be those specified by the Water Resources Council for planning for water and related land resources.

(6).....SELECT THE FLOODS TO BE USED IN A FLOOD HAZARD EVALUATION TO FIT CONDITIONS OF THE AREA BEING INVESTIGATED.

The floods that need to be considered before selecting the evaluation floods are the 100-year flood (discussed under Guideline 3), the floodplain flood discussed under Guideline 3, the regulatory floods used by States or local governments, and lesser floods such as the 25 and 50-year floods, which are of use in evaluations when those floods' elevations would extend outside the floodway.

With the Plan Approach, official maps of a particular floodplain should show land elevations and also the boundaries of the basic and possibly other frequency floods.

The Case Approach, requires considerable field and office work, but there are ways in which the work can be simplified. This is especially true if flood determinations were made previously for upstream or downstream sites in the vicinity. Agencies named in Section 3 of Executive Order 11296 should be consulted on these matters. There is also the possibility that the site under consideration is in an area studied by the Corps of Engineers, Geological Survey, Soil Conservation Service, Tennessee Valley Authority, or by a State or local water resource agency. If it is, then maps in the study report may give site elevations, and elevations of the 100-year and flood-plain floods. If elevations of lesser floods are needed, they may be determined from information in the report text or obtained from the office that carried out the study.

In a location where a State or local government has established regulations for floodplain use, the Federal agency making the flood hazard evaluation should consider the provisions of those regulations if they are more restrictive than provisions suggested by these guidelines.

(7).....USE, AS THE MINIMUM AMOUNT OF INFORMATION FOR AN EVALUATION OF FLOOD HAZARD, THE ELEVATION OF THE LOWEST POINT OF WATER ENTRY (TAKING SEEPAGE UNDER FLOOD CONDITIONS INTO ACCOUNT, IF NECESSARY) AT THE SITE OR STRUCTURE BEING EVALUATED, THE ELEVATIONS OF THE APPLICABLE FLOODS AT THE LOCATIONS OF THE SITE OR STRUCTURE, AND THE INTENDED USE OF THE SITE OR STRUCTURE AND ITS CONTENTS.

The lowest point of water entry of a structure may be at the elevation of a basement drain outlet, rather than at a basement window, or it may be at the lowest level of seepage through a foundation during prolonged flooding.

When the "applicable floods" are selected, as discussed in Guideline 6, their elevations will be known. The elevations and the intended use of the site or structure, and the structure contents, will be provided by the applicant.

(8).....USE, AS SUPPLEMENTARY INFORMATION FOR AN EVALUATION OF FLOOD HAZARD, THE PRESENT AND PROPOSED MEANS OF FLOOD WARNING, AVAILABLE MEANS OF ESCAPE FROM FLOODS, AND THE TYPES OF STRUCTURES FOR PERMANENT OF TEMPORARY OCCUPANCY, WHICHEVER ARE APPLICABLE.

For information on flood warnings, see: "Floods and Flood Warnings", NOAA (ESSA) Pamphlet No. P1 660025, dated 1969; Flood Warning Benefit Evaluation--Susquehanna River Basin (Urban Residences), U.S. Department of Commerce, NOAA, National Weather Service, Techn. Memo. WBTM HYDRO 10, March 1970; and "A Model Hurricane Plan for a Coastal Community", NOAA, National Weather Service, July 1966.

The location and evaluation of means of escape from floods is made through use of detailed maps showing roads and other facilities of the area.

(9).....CONSIDER THE EFFECTS OF FLOOD-PROOFING ON THE REDUCTION OF FLOOD HAZARD.

Floodproofing of a permanent nature (at least as permanent as the structures or facility to which it is applied) will justify a more intensive use at a location where such a use would ordinarily not be permitted. The effect of floodproofing is to increase the elevation of the lowest point of water entry (see Guideline 7), so that flood hazard is reduced. Types of floodproofing are described in "Introduction to Flood Proofing" by John R. Sheaffer; The Center for Urban Studies, University of Chicago; April 1967.

(10).....DETERMINE THE EFFECTS OF PROPOSED HIGHWAY CONSTRUCTION IN THE FLOODPLAIN AND ITS VICINITY, AND OF PROPOSED UPSTREAM OR LOCAL FLOOD PREVENTION OR CONTROL MEASURES, IF ANY, ON THE ELEVATIONS OF THE EVALUATION FLOODS.

Hydrologic expertise is needed for these determinations, but not necessarily within the agency making the hazard evaluation.

The Federal Highway Administration, in its implementation of Executive Order 11296, has issued Memorandum 20-1-67 (32-44) concerning evaluation of flood hazard for Federally financed highways.

In part, the memorandum reads as follows:

"In planning the location of a highway, serious consideration should be given to locations that avoid areas subject to flooding. If an encroachment of a floodplain is necessary, an evaluation should be made of the flood potential, the effect of the flood potential on the highway, and the effect of the highway construction on the flood hazard. Such evaluations should assure that any highway structure, roadway embankment, or bridge, that encroaches on or crosses the floodplain of a drainage course will not cause a significant adverse effect to developments in the floodplain and will be capable of withstanding the flood flow with minimum damage".

The Federal Highway Administration requires that the State Highway Departments make (or cause to be made) the flood hazard evaluation. Thus, inquiries regarding the effects of proposed highways should be made of those Departments.

The effects of existing or proposed upstream or local flood prevention or control measures will generally be learned from the agency or organization responsible for such measures and will be used in conjunction with Guideline 13.

If information on the effects of proposed highways or protective measures is nowhere available, the agencies mentioned in Section 3 of Executive Order 11296 may be able to provide assistance in determining the effects.

(11).....MAKE THE EVALUATION OF FLOOD HAZARD FOR THE SITE OR STRUCTURE, USING INFORMATION COMPILED UNDER THE PRECEDING GUIDELINES, AND DECIDE WHETHER THE PROPOSED USE IS SUITABLE AT THE PROPOSED LOCATION AND, IF SO, UNDER WHAT CONDITIONS.

If the impact analysis mentioned in Guideline 5 has been made, that analysis will provide the information needed for a decision about a proposed use.

If such an analysis is not made, the evaluation and decision are based on the information compiled under the preceding guidelines. This information, at a minimum, will be the site or structure and flood elevations mentioned in Guideline 7 but the evaluation will be improved by also having on hand the information compiled for Guidelines 8, 9, and 10. Whether using the Plan Approach or the Case Approach, the decisions are more readily made if uses, or classes of uses, are tabulated in order of degree of protection required or inversely, the maximum flood hazard permitted under the agency's policy. Guides to degrees of protection for differing classes and uses of land and facilities are given in the following tabulation:

| <u>Uses or Facilities</u> | <u>Degree of Protection Required</u> | <u>Permissible Location & Lowest Water-Entry Elevation</u> |
|--|--------------------------------------|--|
| Buildings containing valuable documents or data or instruments, or materials dangerous to the public if released by flooding; power installations needed in emergencies; hospitals and like institutions; etc. | Maximum | Outside the Area of Floodplain floods. |
| Residential buildings whose occupants may not have adequate warning or means of escape during floods; public service installations needing high protection; permanent memorial cemeteries; etc. | High | Not below the elevation of the 100-year flood, and not in a riverine floodway. |
| Buildings with salvageable or replaceable goods or for storage of readily moved goods; low-cost service shops; etc. | Moderate | Not below the elevation of the 50-year flood, and not in a riverine floodway. |
| Open-air markets or theaters or facilities storing low-cost, non-dangerous materials; etc. | Low | Not below the elevation of the 25-year flood, and not in a Riverine Floodway. |

| <u>Uses or Facilities</u> | <u>Degree of Protection Required</u> | <u>Permissible Location & Lowest Water-Entry Elevation</u> |
|---|--------------------------------------|--|
| Low-value crop or pasture land, picnic grounds, fishing piers, recreation and wild-life use, etc. | Minimum | |

For a debris cone area, such a tabulation will require use of a parameter other than flood elevation alone to indicate degree of protection. Distance from the flood source may be a more useable parameter; structural elevation above normal ground level may be another.

With a tabulation of permitted uses and the information from Guidelines 7 through 10, it will be possible to make the hazard evaluation and the decision regarding the proposed use and location. It should also, be decided whether the applicant must meet certain conditions, such as installing floodproofing, or whether restrictions on the use are needed.

(12).....ADOPT THE POLICY OF DISCOURAGING THE CONSTRUCTION OF THOSE ROADS, UTILITIES, AND OTHER PUBLIC FACILITIES (EXCEPT THOSE CROSSING STREAMS) WITHIN THE MOST HAZARDOUS PORTIONS OF THE FLOODPLAIN THAT AGGRAVATE FLOODING AND ENCOURAGE UNDESIRABLE DEVELOPMENTS IN THAT ZONE.

In general, the higher hazard is in the area between the flood source and about the limit of flooding in a 25-year flood. There is hazard above that level, of course, but excluding all roads, utilities, and other public facilities throughout a floodplain appears to be desirable only if that area is to be retained in its natural state. The floodway, of course, should be kept free of significant flow obstructions.

(13).....DEVELOP, IN CONJUNCTION WITH LOCAL "PERMIT AGENCIES" A LIST OF FACILITIES AND USES THAT WOULD BE PERMITTED IN PRESENT FLOODPLAINS BEFORE AND AFTER COMPLETION OF UPSTREAM OR LOCAL FLOOD PREVENTION OR CONTROL MEASURES SO AS TO ENSURE THAT CONSTRUCTION OR OCCUPANCY DOES NOT OCCUR BEFORE THE MEASURES ARE EFFECTIVE.

"Permit agencies" are State or local government agencies that may have laws, statutes, or ordinances under which the agencies issue permits for, or otherwise regulate, use of floodplains. The public should know about and have ready access to such "Permit agencies".

(14).....DELINEATE, OR ENSURE THE DELINEATION OF, ON FEDERALLY OWNED PROPERTIES, THE ELEVATION OF THE 100-YEAR FLOOD, AND THE ELEVATIONS AND DATES OF OCCURRENCE OF FLOODS OF RECORD WHOSE MAGNITUDES SHOULD BE KNOWN BY THE PUBLIC.

With the Plan Approach, such delineations can be made once the official uses and the flood elevations are known. With the Case Approach, the work will usually be piecemeal and the lack of delineations may encourage the submission of applications for unsuitable uses in the area.

(15).....ENCOURAGE STATE AND LOCAL AGENCIES TO KEEP A PERMANENT RECORD OF INFORMATION ON EACH FLOOD PLAIN EVALUATED, THE FLOOD HAZARD EVALUATION PROCEDURES AND DECISIONS, THE FLOOD PREVENTION OR CONTROL MEASURES PROPOSED FOR UPSTREAM OR LOCAL CONSTRUCTION, THE FLOOD ELEVATION DELINEATIONS, THE USES THAT ARE SUITABLE AND THE ORDER OR SCHEDULE OF ESTABLISHMENT OF SUITABLE FACILITIES, THE SATISFACTORY HUMAN AND ANIMAL OCCUPANCY AND THE GENERAL STANDARDS APPLICABLE TO RECOMMENDED OR APPROVED USES OF THE FLOOD HAZARD AREA. WHERE FLOODPLAIN REGULATION BY LOCAL "PERMIT AGENCIES" OR DIRECT FEDERAL REGULATION IS MADE A CONDITION OF USE OR OCCUPANCY, OR WHERE GUARANTEES FROM USERS WHOSE PERMISSION TO BUILD OR OCCUPY IS CONTINGENT ON THEIR PERFORMANCE OF SPECIFIED ACTIONS, FORMAL GUARANTEES OR AGREEMENTS AND OTHER DECISIONS REACHED FOR THE AREA SHOULD BE A MATTER OF PERMANENT RECORD.

APPENDIX E

12/30/76

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BOX MODEL INFORMATION

Air quality estimates for noncontroversial, noncritical situations may be made through use of a "Box Model" technique. This is a worst case model. FAA provides a computer model which should be used in other circumstances. FAA also provides a computer-assisted quick look capability for use when desired or when a measure of uncertainty is reflected through use of the Box Model. Other computer models may be used if the methodology is described in environmental assessment reports, generally in an appendix, and when FAA approves use of such models.

The Box Model method of air quality computation uses the emissions generated in a unit landing and takeoff operation as the basic parameter for estimates. This is called an LTO cycle based on peak hour operations. It is important to stress that LTO cycles equal the number of operations divided by 2; i.e., it takes a landing and takeoff operation to constitute a cycle. The dimensions of the box are associated with aircraft type. Its length is a typical distance between the locations where the aircraft descends to 1,100 meters above the runway on approach, and reaches 1,100 meters again on departure. The 1,600 meter width of the box is arbitrary. Box dimensions for various aircraft types are shown in Table I.

Table II shows total emissions in terms of pounds per engine for a variety of aircraft for general background information. Total emissions resulting in a peak hour on an average day or from annual operations may be estimated in terms of the forecast number of LTO cycles for each condition. In making this calculation, it must be remembered that an LTO cycle consists of two air traffic operations: a landing and a takeoff. The table includes the operating times used to calculate emissions associated with each cycle. Actual times and emissions may be more or less, depending upon airport configuration and operating conditions. A peak hour with 100 peak hour operations would, thus, have 50 LTO cycles.

Table III shows concentrations of emissions determined for various aircraft types and for each LTO cycle. It is assumed that total emissions for each cycle are dispersed uniformly throughout the box. Unlike the amounts per cycle, concentration values are affected by a wind factor. The extreme condition of pollution occurs during peak hour operations when wind speed is low. The values shown in the table assume a wind speed of one meter per second. This speed is representative of the more extreme conditions of concern regarding pollution; i.e., a worst case state/situation. During a typical hour when wind speed is, for example, ten meters per second, concentrations would be ten percent of the indicated values because air in the box is being replaced by new air at ten meters per second instead of one meter per second.*

Table III is used after determining the forecast number of LTO cycles of each aircraft type during a peak hour operation. Predicted concentrations are the sum of concentrations determined for each aircraft type using the airport. For example, from Table III it can be estimated that 100 operations

* NOTE: This assumes the "new air" is unpolluted. Further, it should be noted that in the event that there are existing high concentrations of pollutants downwind from the airport, it may be necessary to evaluate the effect of the airport generated pollutants on the downwind area. In this case, the box model may be inadequate.

TABLE I: MIXING VOLUMES AND AMOUNTS OF EMISSIONS

| Type Aircraft | LTO Cycle Mins. | Closed Box Model Dimensions | | | Volume ₃ Meters |
|-------------------------------|--------------------|-----------------------------|-----------------|-------|-------------------------------|
| | | Length | Meters Width | Depth | |
| Long-range jet | 13.9 | 23,100 | 1,600 | 1,100 | $40,656 \times 10^6$ |
| Medium-range jet | 13.9 | 23,200 | 1,600 | 1,100 | $40,656 \times 10^6$ |
| Business jet | 9.0 | 7,800 | 1,600 | 1,100 | $13,790 \times 10^6$ |
| Air carrier turboprop | 14.5 | 22,500 | 1,600 | 1,100 | $39,400 \times 10^6$ |
| General aviation turboprop | 14.5 | 22,500 | 1,600 | 1,100 | $39,400 \times 10^6$ |
| Air carrier piston | 16.7 | 30,700 | 1,600 | 1,100 | $54,000 \times 10^6$ |
| General aviation piston | 17.9 | 27,600 | 1,600 | 1,100 | $48,600 \times 10^6$ |

Source: Compilation of Air Pollutant Factors, Second Edition, U. S.
Environmental Protection Agency, April 1973

TABLE II: EMISSION FACTOR RATINGS PER AIRCRAFT LTO CYCLE
(lbs. per engine)

| Type Aircraft | Particulates | Sulfur Oxides | Carbon Monoxide | Hydro-carbons | Nitrogen Oxides |
|----------------------------|--------------|---------------|-----------------|---------------|-----------------|
| Long-Range Jet | 1.210 | 1.560 | 47.400 | 41.200 | 7.900 |
| Medium-Range Jet | 0.410 | 1.010 | 17.000 | 4.900 | 10.200 |
| Business Jet | 0.110 | 0.370 | 15.800 | 3.600 | 1.600 |
| Air Carrier Turboprop | 1.100 | 0.400 | 6.600 | 2.900 | 2.500 |
| General Aviation Turboprop | 0.20 | 0.180 | 3.100 | 1.100 | 1.200 |
| Air Carrier Piston | 0.560 | 0.280 | 304.000 | 40.700 | 0.400 |
| General Aviation Piston | 0.020 | 0.014 | 12.200 | 0.400 | 0.047 |
| Helicopter | 0.250 | 0.180 | 5.700 | 0.520 | 0.570 |

Source: Compilation of Air Pollutant Emission Factors, Second Edition,
U. S. Environmental Protection Agency, Table 3.2 - 1.3, April 1973.

TABLE-III: EMISSION CONCENTRATIONS PER AIRCRAFT LTO CYCLE

| Type Aircraft | No. of Engines* | Particulates $\mu\text{g}/\text{m}^3$ | Sulfur Oxides $\mu\text{g}/\text{m}^3$ | Carbon-Monoxide mg/m^3 | Hydro-carbons $\mu\text{g}/\text{m}^3$ | Nitrogen oxides $\mu\text{g}/\text{m}^3$ |
|----------------------------|-----------------|---------------------------------------|--|--|--|--|
| Long-range jet | 4 | 0.054 | 0.069 | 0.0021 | 1.839 | 0.354 |
| | 3 | 0.041 | 0.052 | 0.0015 | 1.379 | 0.266 |
| Medium-range jet | 4 | 0.019 | 0.045 | 0.0007 | 0.216 | 0.453 |
| | 3 | 0.014 | 0.034 | 0.0006 | 0.162 | 0.339 |
| | 2 | 0.009 | 0.023 | 0.0004 | 0.108 | 0.226 |
| Business jet | 4 | 0.015 | 0.049 | 0.002 | 0.463 | 0.212 |
| | 2 | 0.008 | 0.025 | 0.001 | 0.231 | 0.106 |
| Air carrier turboprop | 4 | 0.049 | 0.018 | 0.0003 | 0.132 | 0.112 |
| | 2 | 0.024 | 0.009 | 0.0002 | 0.066 | 0.056 |
| General aviation turboprop | 2 | 0.005 | 0.004 | 0.0001 | 0.025 | 0.027 |
| Air carrier piston | 4 | 0.019 | 0.010 | 0.010 | 1.369 | 0.013 |
| | 2 | 0.009 | 0.005 | 0.005 | 0.685 | 0.007 |
| General aviation piston | 2 | 0.0004 | 0.0002 | 0.0002 | 0.007 | 0.0009 |
| | 1 | 0.0002 | 0.0001 | 0.0001 | 0.004 | 0.0005 |

* - This column indicates the type of aircraft. The emissions data shown in the other columns are the totals for the type aircraft. Do not multiply the emission data by the number of engines.

Source: Compilation of Air Pollutant Emission Factors, Second Edition, U. S. Environmental Protection Agency, April 1973.

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by a three-engine long range jet and 100 operations by a two-engine general aviation piston engine aircraft would produce a concentration of carbon monoxide as follows:

$$(.0015 \text{ mg/m}^3) \times \frac{100}{2} = .075 \text{ mg/m}^3$$

$$(.0002 \text{ mg/m}^3) \times \frac{100}{2} = .010 \text{ mg/m}^3$$

$$\text{TOTAL} = .085 \text{ mg/m}^3$$

From Table IV it can be determined that the above estimated 0.085 mg/m^3 concentration of carbon monoxide during a peak hour is much less than the total standard of 40.0 mg/m^3 which is not to be exceeded more than once per year. It should be noted that a maximum concentration of 10 mg/m^3 is associated with an eight-hour average. Assume that the operations in the foregoing example were also representative of hourly traffic during an eight-hour period on the peak day. The forecast concentration of 0.085 mg/m^3 is much less than the standard of 10.0 mg/m^3 . Therefore, it may be assumed that emissions of carbon monoxide in this example are of no practical consequence with respect to the standard.

It would be necessary to also make a similar comparison with any state or local standards.

It should be noted that the units in Table III are not the same for the various pollutants. In the foregoing example, concentrations of nitrogen oxides would be:

$$0.266 \times 50 = 13.300 \text{ } \mu\text{g/m}^3$$

$$0.0009 \times 50 = .045 \text{ } \mu\text{g/m}^3$$

$$\text{TOTAL} = 13.345 \text{ } \mu\text{g/m}^3$$

The estimated concentrations during a worst hour are less than the national standard (annual arithmetic mean) of $100 \text{ } \mu\text{g/m}^3$, as shown in Table IV. Therefore, it would not be necessary to reduce the estimate by also considering average wind direction and speeds and average numbers of operations per hour.

The Box Model has been used for several years, but should be revised expansively. Specifically, it should include estimates of pollutions produced (1) for each landing and takeoff operation, (2) by the service vehicles and (3) by vehicles used to transport passengers and cargo, including parking areas. This would provide the totality of the mobile emissions traceable to airport operations. Provisions should also be made to accommodate adjustments related to aircraft taxi distances and ground operating delay.

TABLE IV

NATIONAL AMBIENT AIR QUALITY STANDARDS

| Pollutant | |
|---|--|
| Carbon monoxide (Primary and secondary standards are the same) | <ul style="list-style-type: none">- 10 milligrams per cubic meter (9 ppm), maximum 8-hour concentration not to be exceeded more than once per year.- 40 milligrams per cubic meter (35 ppm), maximum one-hour concentration not to be exceeded more than once per year. |
| Nitrogen dioxide (Primary and secondary standards are the same) | <ul style="list-style-type: none">- 100 micrograms per cubic meter (0.05 ppm), annual arithmetic mean. |
| Hydrocarbons (non-methane) (Primary and secondary standards are the same) | <ul style="list-style-type: none">- 160 micrograms per cubic meter (0.24 ppm), maximum three-hour concentration (6-9 a.m.) not to be exceeded more than once per year. For use as a guide in devising implementation plans to meet the oxidant standards. |
| Particulate matter Primary standard | <ul style="list-style-type: none">- 75 micrograms per cubic meter, annual geometric mean.- 260 micrograms per cubic meter, maximum 24-hour concentration not to be exceeded more than once per year. |
| Secondary standard | <ul style="list-style-type: none">- 60 micrograms per cubic meter, annual geometric mean, as a guide to be used in assessing implementation plans to achieve the 24-hour standard.- 150 micrograms per cubic meter, maximum 24-hour concentration not to be exceeded more than once per year. |

TABLE IV (CONTINUED)

| Pollutant | Standard |
|-------------------------------|---|
| Sulfur dioxide | -80 micrograms per cubic meter, |
| Primary standard | annual arithmetic mean. |
| | -365 micrograms per cubic meter, |
| | maximum 24-hour concentration not |
| | to be exceeded more than once per |
| | year. |
| Secondary standard | -1300 micrograms per cubic meter, |
| | maximum three-hour concentration |
| | not to be exceeded more than once |
| | per year. |
| Photochemical Oxidant | -160 micrograms per cubic meter, |
| (Primary and secondary | maximum one-hour concentration |
| standards are the same) | not to be exceeded more than once |
| | per year. |
| National Primary Standards: | The levels of air quality necessary, with |
| | an adequate margin of safety, to protect |
| | the public health. |
| National Secondary Standards: | The levels of air quality necessary to |
| | protect the public welfare from any known |
| | or anticipated adverse effect of a pollutant. |

Source: Environmental Protection Agency, "National Primary and Secondary Ambient Air Quality Standards," (Federal Register, 36 (84), April 30, 1971) p. 8187

Finite Line Source Dispersion Model

This model is developed to treat long line sources and compute air pollution dispersion from mobile sources such as aircraft. The dispersion model is constructed on the basis of a Gaussian-type transport kernel.

In preparation of the model, a "Puff Model" theory is used. This model considers the release from mobile sources as continuous, interacting "puffs," each puff extending over a finite line segment and/or a duration of a time T. For this duration, all meteorological parameters are considered constant. An average of one-hour duration (T = 1 hour) is used in the computations.

The coordinate system used for the model is shown in Figure 1. In the system, the origin is taken at the ground level and beneath the point of emission with the x-axis extending horizontally along the line source. The y-axis is in the horizontal plane, perpendicular to the x-axis, and the z-axis extends vertically.

The average concentration for a ground-level horizontal line source at an angle ϕ relative to the wind and at a receptor point (x, y, z) can be expressed as:

$$\chi_i = \frac{q_i}{2 \sqrt{2\pi} (UT \sin \phi \sigma_z)} \exp \left(-0.5 \frac{z^2}{\sigma_z^2} \right).$$

Equation 1:

$$\left[\operatorname{erf} \left(\frac{L \sin \phi - y}{\sqrt{2} \sigma_y} \right) - \operatorname{erf} \left(-\frac{y}{\sqrt{2} \sigma_y} \right) \right]$$

Where χ_i = Average concentrations for i^{th} puff

q_i = Linear mass density (gm/m - sec)

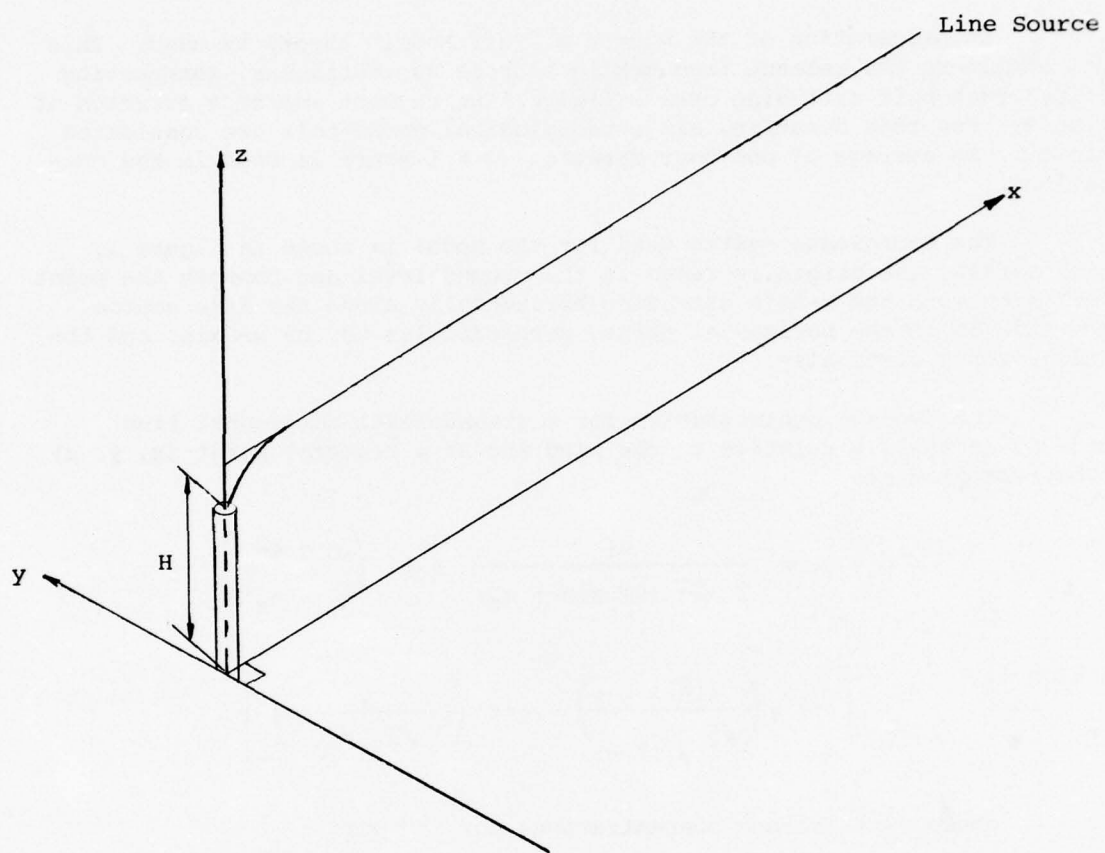
U = Wind speed (m/sec)

T = Duration period (hour)

σ_z = Gaussian vertical dispersion coefficient (m)

σ_y = Gaussian horizontal dispersion coefficient (m)

L = Length of the line (m)



Coordinate System
Finite Line Source Dispersion Model

Figure 1

$$\operatorname{erf}(x) = \frac{2x}{\sqrt{\pi}} \left[1 - \frac{x^2}{1!3} + \frac{x^4}{2!5} - \frac{x^6}{3!7} \right] \quad [x^2 < \infty]$$

Gaussian dispersion coefficients are a function of downwind distance, distance between source and receptor point, and are obtained from the "Workbook of Atmospheric Dispersion Estimates" by Turner.

When the line is elevated to height H and ground reflection is taken into consideration,

$$\exp. \left(-0.5 \frac{z^2}{\sigma_z^2} \right) \text{ should be replaced by}$$

$$\text{Equation 1A:} \quad \left[\exp. \left(-0.5 \frac{(z-H)^2}{\sigma_z^2} \right) + \exp. \left(-0.5 \frac{(z+H)^2}{\sigma_z^2} \right) \right]$$

For long lines, the first error function in equation 1 goes to 1 and, therefore, equation reduces to

$$\text{Equation 2:} \quad \chi_i = \frac{q_i}{2 \sqrt{2\pi} (UT \sin \phi \sigma_z)} \exp. \left(-0.5 \frac{z^2}{\sigma_z^2} \right) \left[1 - \operatorname{erf} \left(-\frac{y}{\sqrt{2} \sigma_y} \right) \right]$$

When the angle between the wind and the line becomes equal to or less than 10° ($\phi \leq 10^\circ$), the equation can be approximated by its limiting expression at $\phi = 0$ (parallel wind).

$$\text{Equation 3:} \quad \chi_{i0} = \frac{q_i L}{2 \sqrt{2\pi} (UT \sigma_y \sigma_z)} \exp. \left(-0.5 \frac{y^2}{\sigma_y^2} - 0.5 \frac{z^2}{\sigma_z^2} \right)$$

For inclining line sources, with angle of inclination (θ), the equation becomes

$$J = \left(\sqrt{\pi}/2 \cdot A \cdot \sum^2 \left\{ \exp(B_i^2 - C_i^2) \cdot \left[\operatorname{erf}(B_i + L/A) - \operatorname{erf}(B_i) \right] \right\} \right)$$

Where H = Height of the low end of the line

$$A = \sqrt{2} \cdot \sigma_y \cdot \sigma_z \cdot (\cos^2 \theta \sin \phi \sigma_z^2 + \sin \theta \sigma_y^2)^{-1/2}$$

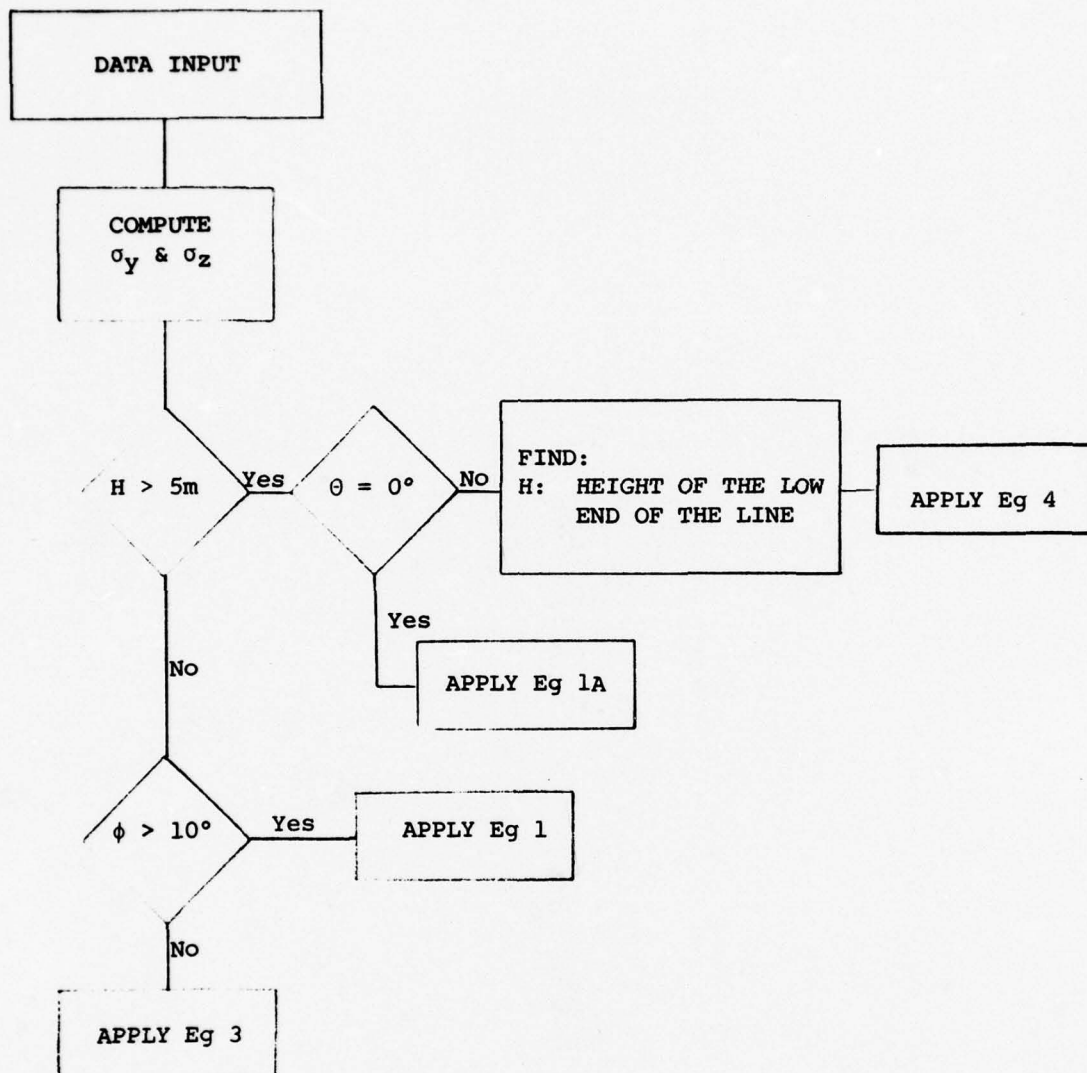
$$B_1 = -2(\sigma_y \sigma_z)^{-2} \cdot A \cdot \left[y \cos \theta \sin \sigma_z^2 + (Z - H) \sin \theta \sigma_y^2 \right]$$

$$B_2 = -2(\sigma_y \sigma_z)^{-2} \cdot A \cdot \left[y \cos \theta \sin \sigma_z^2 + (Z + H) \sin \theta \sigma_y^2 \right]$$

$$C_1 = \left[\frac{y^2}{2 \sigma_y^2} + \frac{(Z - H)^2}{2 \sigma_z^2} \right]^{1/2}$$

$$C_2 = \left[\frac{y^2}{2 \sigma_y^2} + \frac{(Z + H)^2}{2 \sigma_z^2} \right]^{1/2}$$

Application of equations 1 through 3 requires careful planning and selection of the correct formula. Figure 2 shows a flow diagram that is used for this purpose.



Flow Diagram of the
Line Source Dispersion Model

Figure 2

APPENDIX G

RELOCATION ASSISTANCE AND PAYMENTS

Illustration of appropriate treatment of Relocation and Assistance problems in an Environmental Report.

References:

1. DOT Order 5610.1B, Attachments 2 and 6.
2. FAA Order 5050.2B, paragraph 44d (October 21, 1976)
3. FAA Advisory Circular 150/5100-11 (February 10, 1975)

It is assumed that the text of the statement includes exhibits clearly defining the affected area including locations of schools, hospitals, places of public interest, residential areas, etc.

RELOCATION ASSISTANCE AND PAYMENTS

This airport development project will cover an area of approximately 100 acres. On this project area are 300 single family residences, 75 duplexes, 10 multi-unit apartment houses, 5 businesses, 1 school and 2 churches.

All real property acquisition will be accomplished in accordance with the provisions of Title III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646), hereinafter referred to as the Uniform Act, and Subpart I of Part 25 of the Regulation of the Secretary of Transportation (OST). Project assurances for acquisition will be submitted with the Preapplication for Federal Assistance in accordance with OST Regulations, Part 25.59.

All relocation assistance will be accomplished in accordance with the provisions of Title II of the Uniform Act and Part 25 of the OST Regulations. Project assurances for relocation assistance and payments will be submitted with the preapplication for Federal assistance in accordance with OST Regulations, Part 25.57.

The airport authority shall provide an effective relocation assistance program and assure that:

1. The project shall not be advertised for construction or development until each displaced person has either himself obtained, or has the right of possession to, an adequate replacement dwelling or the authority has offered him a comparable replacement dwelling which is available for immediate occupancy.
2. A person shall not be displaced from his dwelling unit without first receiving at least 90 days notice in writing that the premises will be needed for construction or clearance.
3. Relocation payments are determined in a fair and equitable manner and are paid to eligible displaced persons in a timely manner.
4. Relocation advisory services are available to all displaced persons and furnished promptly to all persons requesting assistance.
5. Notices and information, prescribed by OST Regulations, Part 25, and Advisory Circular 150/5100-11, are furnished to the public on a timely basis.
6. A relocation plan will be prepared and submitted prior to any real property acquisition.
7. Last resort housing (Section 206(a) of the Uniform Act) will be provided if comparable decent, safe and sanitary dwellings are not available within the displaced person's financial means.

Existing Neighborhood:

A majority of the single family and duplex structures are approximately 1,000 to 1,500 square feet in size and contain 2 to 3 bedrooms. Ninety percent of these structures were constructed prior to 1960. The estimated values of residences in the project area are as follows:

Single Family Dwellings:

| | <u>Value</u> | <u>Rental Rate</u> |
|-----------|-------------------|--------------------|
| 1 bedroom | \$14,000 - 22,000 | \$85 to 160/month |
| 2 bedroom | 17,000 - 31,000 | 100 to 185/month |
| 3 bedroom | 21,000 - 38,000 | 140 to 210/month |

Duplex Dwellings:

| | | |
|-----------|--------------------|------------------------|
| 1 bedroom | \$22,000 to 25,000 | \$85 to 100/month/unit |
| 2 bedroom | 23,000 to 29,000 | 130 to 145/month/unit |
| 3 bedroom | 25,000 to 35,000 | 140 to 160/month/unit |

Over 50 percent of the living units are more than 25 years old, and less than 10 percent are 15 years or newer. Conditions range from average to poor.

There is a total of 200 apartment units in the multi-unit apartments. The average rental rate is \$100 for an efficiency unit; \$125 for a 1 bedroom; \$150 for a 2 bedroom; and \$175 for a 3 bedroom unit. There are 30 efficiency units, 50 one-bedroom units, 100 two-bedroom units, and 20 three-bedroom units in the 10 multi-unit apartment buildings.

The five businesses are small walk-in stores that depend primarily on neighborhood trade.

Characteristics of Families and Individuals to be Displaced:

In this neighborhood, it is estimated that there is an average of three people per living unit. Therefore, approximately 650 people will be relocated from this project. Of the 300 single family residences, 250 are owner occupied and 50 are tenant occupied. Of the 150 duplex units, 10 are owner occupied and the remaining 140 are tenant occupied.

The ethnic makeup of this neighborhood is 75 percent Caucasian, 10 percent Black, 10 percent Spanish surname and approximately 5 percent of other ethnic background. We do not anticipate any problem in relocating these people in an area that is desirable to the displaced person.

The median income in this area is \$8,400. The salary range for people in this area is from approximately \$20,000 to low income whose livelihood is social security. Some residents receive as low as \$125 per month. Replacement housing for the low-income families may be difficult to obtain; therefore, some public housing units may have to be utilized. Approximately 15 percent of the displacees are below poverty level.

Most of the families in the project area are actively employed and work in the same general area. Approximately ten percent of the families to be displaced are retired. We, therefore, conclude that most of the families will desire to remain generally in the area.

Availability of Relocation Housing:

The summary statistics describing characteristics of properties to be taken and areas of probable relocation are shown on page *. These data were obtained from the 1970 census and from additional information concerning changes since the 1970 census. Additionally, the City prepares a monthly report showing the availability of housing in the area, which is defined as the * neighborhood in the City of *. The information sources for these reports are the local multiple listing service of the Real Estate Board and the ad section of the local newspaper.

The most recent available housing report lists the following information about the number and type of dwelling units available for rent and purchase within the \$61 to \$185 rental rate and within the \$15,000 to \$35,000 purchase price.

| | |
|--|-----------------|
| Single family dwelling units for rent | 63 units |
| Duplex to six-family dwelling units for rent | 85 units |
| Apartment and townhouse/condominium units for rent | 295 units |
| Total of all type dwelling units for rent | <hr/> 443 units |
| Single family dwelling units for purchase | 518 units |
| Townhouse and condominium dwelling units for purchase | 193 units |
| Total of all type dwelling units for purchase | <hr/> 711 units |

The rental range of \$61 to \$185 and the purchase price range of \$15,000 to \$35,000 were selected as representing the capabilities of the majority of the owners and tenants within the airport development project. We expect that the current available listings will be sufficient to accommodate the projected three-year displacement demand.

* - Use appropriate exhibit number, name, or other identification.

There are 250 units of decent, safe and sanitary low cost housing in the City that low-income families may relocate to if conventional dwellings or apartments are not available within their financial means. These low-cost housing units normally have a five percent vacancy rate or approximately 10.15 units.

An examination of information indicates that a relocation problem may be expected in connection with rental housing. The data show, for example, that rental costs for four-bedroom units currently range from \$100 to \$200 per month and that comparable rates would be increased from \$200 to \$400 per month. This increase is in excess of the relocation payments payable to the displaced tenants. The data suggests that a severe hardship is likely to be imposed upon at least some of the families to be relocated from rental units, especially two, four and five bedroom units, in the affected area. If this situation occurs, the public sponsor must either purchase or construct "replacement housing of last resort" under the provisions of Section 206(a) of the Uniform Act, utilizing present funds. This requirement is to be imposed upon acceptance of the proposed assistance. No persons or families will be displaced from the project until comparable decent, safe and sanitary housing is available for them as replacement dwellings.

We do not anticipate any problems in relocating the five businesses. The two churches being displaced can either build or purchase a church for sale. There are six churches for sale at the present time.

We anticipate that the school will need to be replaced as there is still a need because of the number of school-age children in the area. This school facility will be replaced by following the DOT "functional replacement" guidelines. The school facilities will be replaced at a site or sites acceptable to the school district using project funds. Preliminary discussions with the school board have located two acceptable sites for replacement. One involves adding * classrooms and * at * schools. The other involves reconstructing the school building in the * community to provide functionally comparable service to the school that is being taken for the project. The details of this transaction will be agreed to prior to the use of school property for the project.

* - Use appropriate exhibit number, name, or other identification.

TOTAL DWELLING UNITS
CURRENTLY AVAILABLE FOR PURCHASE
in the _____ neighborhoods

| Price Range | 1 Bedroom | 2 Bedrooms | 3 Bedrooms | 4 Bedrooms | 5 or More Bedrooms | Total |
|-------------------|-----------|------------|------------|------------|--------------------|-----------|
| \$15,000 - 20,000 | 0 | 80 | 4 | 1 | 1 | 86 |
| 20,001 - 25,000 | 4 | 85 | 125 | 12 | 1 | 227 |
| 25,001 - 30,000 | 2 | 39 | 107 | 28 | 3 | 179 |
| 30,001 - 35,000 | 2 | 30 | 131 | 52 | 3 | 218 (711) |
| 35,001 - 40,000 | 1 | 20 | 163 | 87 | 10 | 281 |
| 40,001 - 45,000 | 0 | 12 | 104 | 77 | 8 | 201 |
| 45,001 - 50,000 | 0 | 4 | 84 | 60 | 14 | 162 |
| 50,001 - 60,000 | 0 | 5 | 46 | 103 | 16 | 170 |
| Total | 9 | 275 | 764 | 420 | 56 | 1,524 |

DISPLACED TENANT HOUSING NEEDS

| Present Rent | 1 Bedroom | 2 Bedroom | 3 Bedroom | 4 Bedroom | 5 or More Bedrooms | Total |
|--------------|-----------|-----------|-----------|-----------|--------------------|-------|
| \$50 - 75 | 1 | 0 | 0 | 0 | 0 | 1 |
| 76 - 100 | 5 | 10 | 0 | 0 | 0 | 15 |
| 101 - 125 | 15 | 52 | 0 | 0 | 0 | 67 |
| 126 - 150 | 18 | 71 | 5 | 3 | 0 | 97 |
| 151 - 175 | 15 | 57 | 45 | 23 | 1 | 141 |
| 176 - 200 | 0 | 21 | 15 | 25 | 3 | 64 |
| 201 - 225 | 0 | 0 | 5 | 0 | 1 | 6 |
| 226 - 250 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 54 | 211 | 70 | 51 | 5 | 391 |

TOTAL OF DSS DWELLING UNITS
CURRENTLY AVAILABLE FOR TENANT OCCUPANCY
in the _____ neighborhood

| Rent Price Range | 1 Bedroom | 2 Bedrooms | 3 Bedrooms | 4 Bedrooms | 5 or More Bedrooms | Total |
|------------------|------------|------------|------------|------------|-----------------------|------------|
| \$61 - 85 | 24 | 1 | 0 | 0 | 0 | 25 |
| 86 - 110 | 25 | 5 | 0 | 0 | 0 | 30 |
| 111 - 135 | 74 | 8 | 0 | 0 | 0 | 82 |
| 136 - 160 | 86 | 85 | 3 | 0 | 0 | 174 |
| 161 - 185 | 33 | 84 | 15 | 0 | 0 | 132 (443) |
| 186 - 210 | 4 | 44 | 19 | 0 | 0 | 67 |
| 211 - 250 | 2 | 26 | 29 | 8 | 1 | 66 |
| 251 - 300 | 1 | 19 | 36 | 13 | 5 | 74 |
| 301 - 350 | 0 | 0 | 27 | 25 | 0 | 52 |
| Total | 249 | 272 | 129 | 46 | 6 | 702 |

DISPLACED OWNER HOUSING NEEDS

| Market Value | 1 Bedroom | 2 Bedroom | 3 Bedroom | 4 Bedroom | 5 or More Bedroom | Total |
|------------------|-----------|-----------|------------|-----------|-------------------|------------|
| \$5,000 - 10,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10,001 - 15,000 | 1 | 0 | 0 | 0 | 0 | 1 |
| 15,001 - 20,000 | 2 | 5 | 0 | 0 | 0 | 7 |
| 20,001 - 25,000 | 2 | 59 | 18 | 0 | 0 | 79 |
| 25,001 - 30,000 | 0 | 12 | 76 | 8 | 1 | 97 |
| 30,001 - 35,000 | 0 | 2 | 34 | 17 | 2 | 55 |
| 35,001 - 40,000 | 0 | 0 | 8 | 5 | 5 | 18 |
| 40,001 - 45,000 | 0 | 0 | 0 | 3 | 0 | 3 |
| 45,001 - 50,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50,001 - 55,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| 55,001 - 60,000 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 5 | 78 | 136 | 33 | 8 | 260 |

APPENDIX H

Title 36—Parks, Forests, and Public Property
CHAPTER VIII—ADVISORY COUNCIL ON HISTORIC PRESERVATION

PART 800—PROCEDURES FOR THE PROTECTION OF HISTORIC AND CULTURAL PROPERTIES

Pursuant to the National Historic Preservation Act of 1966 (80 Stat. 915, 16 U.S.C. 470) and Executive Order 11593, May 13, 1971, "Protection and Enhancement of the Cultural Environment" (36 FR 8921, 16 U.S.C. 470), the Advisory Council on Historic Preservation has established Procedures for Compliance, set forth in the FEDERAL REGISTER of February 28, 1973 (38 FR 5388), to implement the purposes of those authorities. Proposed revisions to those procedures were published in the FEDERAL REGISTER of November 5, 1973 (38 FR 30164) and 30 days were allowed for public comment. Federal agencies were also solicited to consult with the Advisory Council with regard to the development of procedures for the protection of non-federally owned historic and cultural properties as required by section 1(3) of Executive Order 11593.

In response to comments received by the Advisory Council and in consultation with Federal agencies, the proposed procedures have been revised to incorporate suggestions from Federal and State agencies and private citizens. It is the purpose of this notice, through publication of revised "Procedures for the Protection of Historic and Cultural Properties," to apprise the public as well as government agencies, associations, and all other organizations and individuals interested in historic preservation, that the following procedures are hereby adopted as set forth below. The procedures will appear in the Code of Federal Regulations in Title 36, Chapter 8 at Part 800. The procedures are being codified because they affect State and local governmental agencies, private organizations, and individuals, in addition to Federal agencies, to which they are specifically directed, and because of the resultant need to make them widely and readily available.

Federal agencies are advised that the procedures set forth certain steps for agencies to follow to fulfill their obligations pursuant to section 1(3) of Executive Order 11593 and to use as a guide in the development of their required internal procedures in consultation with the Council. The Advisory Council reiterates its solicitation of Federal agencies to consult with the Council on the development of those procedures. Inquiries regarding such consultation, as well as inquiries regarding the substance of and compliance with the procedures in general, should be directed to the Executive Secretary, Advisory Council on Historic Preservation, Suite 430, 1522 K Street NW., Washington, D.C. 20005.

Effective date: January 25, 1974.

ROBERT R. GARVEY, Jr.,
 Executive Director, Advisory
 Council on Historic Preservation.

A new Chapter VIII, Advisory Council on Historic Preservation, containing Part 800, Procedures for the Protection of Historic and Cultural Properties, is added to title 36, CFR, reading as set forth below.

| | |
|--------|--|
| Sec. | |
| 800.1 | Purpose and authorities. |
| 800.2 | Coordination with agency requirements under the National Environmental Policy Act. |
| 800.3 | Definitions. |
| 800.4 | Agency procedures. |
| 800.5 | Consultation process. |
| 800.6 | Council procedures. |
| 800.7 | Other powers of the Council. |
| 800.8 | Criteria of effect. |
| 800.9 | Criteria of adverse effect. |
| 800.10 | National Register criteria. |

AUTHORITY: Pub. L. 89-665, 80 Stat. 915, (16 U.S.C. 470); E.O. 11593, 3 CFR 1971 Comp., p. 154.

§ 800.1 Purpose and authorities.

(a) The National Historic Preservation Act of 1966 created the Advisory Council on Historic Preservation, an independent agency of the Executive branch of the Federal Government, to advise the President and Congress on matters involving historic preservation. Its members are the Secretary of the Interior, the Secretary of Housing and Urban Development, the Secretary of the Treasury, the Secretary of Commerce, the Attorney General, the Secretary of Transportation, the Secretary of Agriculture, the Administrator of the General Services Administration, the Secretary of the Smithsonian Institution, the Chairman of the National Trust for Historic Preservation, and 10 citizen members appointed by the President on the basis of their outstanding service in the field of historic preservation.

(b) The Council reviews Federal, federally assisted, and federally licensed undertakings affecting cultural properties as defined herein in accordance with the following authorities:

(1) Section 106 of the National Historic Preservation Act. Section 106 requires that Federal, federally assisted, and federally licensed undertakings affecting properties included in the National Register of Historic Places be submitted to the Council for review and comment prior to the approval of any such undertaking by the Federal agency.

(2) Section 1(3) of Executive Order 11593, May 13, 1971, "Protection and Enhancement of the Cultural Environment." Section 1(3) requires that Federal agencies, in consultation with the Council, establish procedures regarding the preservation and enhancement of non-federally owned historic and cultural properties in the execution of their plans and programs. After soliciting consultation with the Federal agencies, the Advisory Council has adopted procedures, set forth in §§ 800.3 through 800.10, to achieve this objective and Federal agencies should fulfill their responsibilities under section 1(3) by following these procedures. The Council further recommends that Federal agencies use these procedures as a guide in the development, in consultation with the Council, of their required internal procedures.

(3) Section 2(b) of Executive Order 11593, May 13, 1971, "Protection and Enhancement of the Cultural Environment." Federal agencies are required, by section 2(a) of the Executive Order, to locate, inventory, and nominate properties under their jurisdiction or control to the National Register. Until such processes are complete, Federal agencies must submit proposals for the transfer, sale, demolition, or substantial alteration of federally owned properties eligible for inclusion in the National Register to the Council for review and comment. Federal agencies must continue to comply with section 2(b) review requirements, even after the initial inventory is complete, when they obtain jurisdiction or control over additional properties that are eligible for inclusion in the National Register or when properties under their jurisdiction or control are found to be eligible for inclusion in the National Register subsequent to the initial inventory.

§ 800.2 Coordination with agency requirements under the National Environmental Policy Act.

Section 101(b) (4) of the National Environmental Policy Act (NEPA) declares that one objective of the national environmental policy is to "preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice." In order to meet this objective, the Advisory Council instructs Federal agencies to coordinate NEPA compliance with the separate responsibilities of the National Historic Preservation Act and Executive Order 11593 to ensure that historic and cultural resources are given proper consideration in the preparation of environmental impact statements. Agency obligations pursuant to the National Historic Preservation Act and Executive Order 11593 are independent from NEPA and must be complied with even when an environmental impact statement is not required. However, where both NEPA and the National Historic Preservation Act or Executive Order 11593 are applicable, the Council on Environmental Quality, in its *Guidelines for the Preparation of Environmental Impact Statements* (40 CFR Part 1500), directs that compliance with section 102(2) (C) of NEPA should, to the extent possible, be combined with other statutory obligations—such as the National Historic Preservation Act and Executive Order 11593—to yield a single document which meets all applicable requirements. To achieve this objective, Federal agencies should undertake, to the fullest extent possible, compliance with the procedures set forth below whenever properties included in or eligible for inclusion in the National Register are involved in a project to ensure that obligations under the National Historic Preservation Act and Executive Order 11593 are fulfilled during the preparation of a draft environmental impact statement required under section 102(2) (C) of NEPA. The Advisory Council recommends that compliance with these procedures be undertaken at the earliest

stages of the environmental impact statement process to expedite review of the statement. Statements on projects affecting properties included in or eligible for inclusion in the National Register should be sent directly to the Advisory Council for review. All statements involving historic, architectural, archeological, or cultural resources, whether or not included in or eligible for inclusion in the National Register, should be submitted to the Department of Interior for review.

§ 800.3 Definitions.

As used in these procedures:

(a) "National Historic Preservation Act" means Public Law 89-665, approved October 15, 1966, an "Act to establish a program for the preservation of additional historic properties throughout the Nation and for other purposes," 80 Stat. 915, 16 U.S.C. 470, as amended, 84 Stat. 204 (1970) and 87 Stat. 139 (1973) hereinafter referred to as "the Act."

(b) "Executive Order" means Executive Order 11593, May 13, 1971, "Protection and Enhancement of the Cultural Environment," 36 FR 8921, 16 U.S.C. 470.

(c) "Undertaking" means any Federal action, activity, or program, or the approval, sanction, assistance, or support of any other action, activity or program, including but not limited to:

(1) Recommendations or favorable reports relating to legislation, including requests for appropriations. The requirement for following these procedures applies to both: Agency recommendations on their own proposals for legislation and agency reports on legislation initiated elsewhere. In the latter case only the agency which has primary responsibility for the subject matter involved will comply with these procedures.

(2) New and continuing projects and program activities: directly undertaken by Federal agencies; or supported in whole or in part through Federal contracts, grants, subsidies, loans, or other forms of funding assistance; or involving a Federal lease, permit, license, certificate, or other entitlement for use.

(3) The making, modification, or establishment of regulations, rules, procedures, and policy.

(d) "National Register" means the National Register of Historic Places, which is a register of districts, sites, buildings, structures, and objects, significant in American history, architecture, archeology, and culture, maintained by the Secretary of the Interior under authority of section 2(b) of the Historic Sites Act of 1935 (49 Stat. 666, 16 U.S.C. 461) and section 101(a)(1) of the National Historic Preservation Act. The National Register is published in its entirety in the FEDERAL REGISTER each year in February. Addenda are published on the first Tuesday of each month.

(e) "National Register property" means a district, site, building, structure, or object included in the National Register.

(f) "Property eligible for inclusion in the National Register" means any dis-

trict, site, building, structure, or object which the Secretary of the Interior determines is likely to meet the National Register Criteria. As these determinations are made, a listing is published in the FEDERAL REGISTER on the first Tuesday of each month, as a supplement to the National Register.

(g) "Decision" means the exercise of agency authority at any stage of an undertaking where alterations might be made in the undertaking to modify its impact upon historic and cultural properties.

(h) "Agency Official" means the head of the Federal agency having responsibility for the undertaking or a subordinate employee of the Federal agency to whom such authority has been delegated.

(i) "Chairman" means the Chairman of the Advisory Council on Historic Preservation, or such member designated to act in his stead.

(j) "Executive Director" means the Executive Director of the Advisory Council on Historic Preservation established by Section 205 of the Act, or his designated representative.

(k) "State Historic Preservation Officer" means the official within each State, authorized by the State at the request of the Secretary of the Interior, to act as liaison for purposes of implementing the Act, or his designated representative.

(l) "Secretary" means the Secretary of the Interior, or his designee authorized to carry out the responsibilities of the Secretary of the Interior under Executive Order 11593.

§ 800.4 Agency procedures.

At the earliest stage of planning or consideration of a proposed undertaking, including comprehensive or area-wide planning in which provision may be made for an undertaking or an undertaking may be proposed, the Agency Official shall take the following steps to comply with the requirements of section 106 of the National Historic Preservation Act and sections 1(c) and 2(b) of Executive Order 11593.

(a) *Identification of resources.* As early as possible and in all cases prior to agency decision concerning an undertaking, the Agency Official shall identify properties located within the area of the undertaking's potential environmental impact that are included in or eligible for inclusion in the National Register.

(1) To identify properties included in the National Register, the Agency Official shall consult the National Register, including monthly supplements.

(2) To identify properties eligible for inclusion in the National Register, the Agency Official shall, in consultation with the appropriate State Historic Preservation Officer, apply the National Register Criteria, set forth in Section 800.10, to all properties possessing historical, architectural, archeological, or cultural value located within the area of the undertaking's potential environmental impact. If the Agency Official determines that a property appears to meet the Criteria, or if it is questionable

whether the Criteria are met, the Agency Official shall request, in writing, an opinion from the Secretary of the Interior respecting the property's eligibility for inclusion in the National Register. The Secretary of the Interior's opinion respecting the eligibility of a property for inclusion in the National Register shall be conclusive for the purposes of these procedures.

(b) *Determination of effect.* For each property included in or eligible for inclusion in the National Register that is located within the area of the undertaking's potential environmental impact, the Agency Official, in consultation with the State Historic Preservation Officer, shall apply the Criteria of Effect, set forth in Section 800.8, to determine whether the undertaking has an effect upon the property. Upon applying the Criteria and finding no effect, the undertaking may proceed. The Agency Official shall keep adequate documentation of a determination of no effect.

(c) *Effect established.* Upon finding that the undertaking will have any effect upon a property included in or eligible for inclusion in the National Register, the Agency Official, in consultation with the State Historic Preservation Officer, shall apply the Criteria of Adverse Effect, set forth in §800.9, to determine whether the effect of the undertaking is adverse.

(d) *Finding of no adverse effect.* Upon finding the effect not to be adverse, the Agency Official shall forward adequate documentation of the determination, including evidence of the views of the State Historic Preservation Officer, to the Executive Director for review. Unless the Executive Director notes an objection to the determination within 45 days after receipt of adequate documentation, the Agency Official may proceed with the undertaking.

(e) *Finding of adverse effect.* Upon finding the effect to be adverse or upon notification that the Executive Director does not accept a determination of no adverse effect, the Agency Official shall: (1) Request, in writing, the comments of the Advisory Council; (2) notify the State Historic Preservation Officer of this request; (3) prepare a preliminary case report; and (4) proceed with the consultation process set forth in Section 800.5.

(f) *Preliminary case report.* Upon requesting the comments of the Advisory Council, the Agency Official shall provide the Executive Director and the State Historic Preservation Officer with a preliminary case report, containing all relevant information concerning the undertaking. The Agency Official shall obtain such information and material from any applicant, grantee, or other beneficiary involved in the undertaking as may be required for the proper evaluation of the undertaking, its effects, and alternate courses of action.

§ 800.5 Consultation process.

(a) *Response to request for comments.* Upon receipt of a request for Advisory Council comments pursuant to Section 800.4(e), the Executive Director shall ac-

knowledge the request and shall initiate the consultation process.

(b) *On-site inspection.* At the request of the Agency Official, the State Historic Preservation Officer, or the Executive Director, the Agency Official shall conduct an on-site inspection with the Executive Director, the State Historic Preservation Officer and such other representatives of national, State, or local units of government and public and private organizations that the consulting parties deem appropriate.

(c) *Public information meeting.* At the request of the Agency Official, the State Historic Preservation Officer, or the Executive Director, the Executive Director shall conduct a meeting open to the public, where representatives of national, State, or local units of government, representatives of public or private organizations, and interested citizens can receive information and express their views on the undertaking, its effects on historic and cultural properties, and alternate courses of action. The Agency Official shall provide adequate facilities for the meeting and shall afford appropriate notice to the public in advance of the meeting.

(d) *Consideration of alternatives.* Upon review of the pending case and subsequent to any on-site inspection and any public information meeting, the Executive Director shall consult with the Agency Official and State Historic Preservation Officer to determine whether there is a feasible and prudent alternative to avoid or satisfactorily mitigate any adverse effect.

(e) *Avoidance of adverse effect.* If the Agency Official, the State Historic Preservation Officer, and the Executive Director select and unanimously agree upon a feasible and prudent alternative to avoid the adverse effect of the undertaking, they shall execute a Memorandum of Agreement acknowledging avoidance of adverse effect. This document shall be forwarded to the Chairman for review pursuant to Section 800.6(a).

(f) *Mitigation of adverse effect.* If the consulting parties are unable to unanimously agree upon a feasible and prudent alternative to avoid any adverse effect, the Executive Director shall consult with the Agency Official and the State Historic Preservation Officer to determine whether there is a feasible and prudent alternative to satisfactorily mitigate the adverse effect of the undertaking. Upon finding and unanimously agreeing to such an alternative, they shall execute a Memorandum of Agreement acknowledging satisfactory mitigation of adverse effect. This document shall be forwarded to the Chairman for review pursuant to Section 800.6(a).

(g) *Memorandum of Agreement.* It shall be the responsibility of the Executive Director to prepare each Memorandum of Agreement required under these procedures. In preparation of such a document the Executive Director may request the Agency Official to prepare a proposal for inclusion in the Memorandum, detailing actions to be taken to avoid or mitigate the adverse effect.

(h) *Failure to avoid or mitigate adverse effect.* Upon the failure of consulting parties to find and unanimously agree upon a feasible and prudent alternative to avoid or satisfactorily mitigate the adverse effect, the Executive Director shall request the Chairman to schedule the undertaking for consideration at the next Council meeting and notify the Agency Official of the request. Upon notification of the request, the Agency Official shall delay further processing of the undertaking until the Council has transmitted its comments or the Chairman has given notice that the undertaking will not be considered at a Council meeting.

§ 800.6 Council procedures.

(a) *Review of Memorandum of Agreement.* Upon receipt of a Memorandum of Agreement acknowledging avoidance of adverse effect or satisfactory mitigation of adverse effect, the Chairman shall institute a 30-day review period. Unless the Chairman shall notify the Agency Official that the matter has been placed on the agenda for consideration at a Council meeting, the memorandum shall become final: (1) Upon the expiration of the 30-day review period with no action taken; or (2) when signed by the Chairman. Memoranda duly executed in accordance with these procedures shall constitute the comments of the Advisory Council. Notice of executed Memoranda of Agreement shall be published in the *FEDERAL REGISTER* monthly.

(b) *Response to request for consideration at Council meeting.* Upon receipt of a request from the Executive Director for consideration of the proposed undertaking at a Council meeting, the Chairman shall determine whether or not the undertaking will be considered and notify the Agency Official of his decision. To assist the Chairman in this determination, the Agency Official and the State Historic Preservation Officer shall provide such reports and information as may be required. If the Chairman decides against consideration at a Council meeting, he will submit a written summary of the undertaking and his decision to each member of the Council. If any member of the Council notes an objection to the decision within 15 days of the Chairman's decision, the undertaking will be scheduled for consideration at a Council meeting. If the Council members have no objection, the Chairman shall notify the Agency Official at the end of the 15-day period that the undertaking may proceed.

(c) *Decision to consider the undertaking.* Upon determination that the Council will consider an undertaking, the Chairman shall: (1) Schedule the matter for consideration at a regular meeting no less than 60 days from the date the request was received, or in exceptional cases, schedule the matter for consideration in an unannounced or special meeting; (2) notify the Agency Official and the State Historic Preservation Officer of the date on which comments will be considered; and (3) authorize the Executive Director to prepare a case report.

(d) *Content of the case report.* For

purposes of arriving at comments, the Advisory Council prescribes that certain reports be made available to it and accepts reports and statements from other interested parties. Specific informational requirements are enumerated below. Generally, the requirements represent an explication of elaboration of principles contained in the Criteria of Effect and in the Criteria of Adverse Effect. The Council notes, however, that the Act recognizes historical and cultural resources should be preserved "as a living part of our community life and development." Consequently, in arriving at final comments, the Council considers those elements in an undertaking that have relevance beyond historical and cultural concerns. To assist it in weighing the public interest, the Council welcomes information not only bearing upon physical, sensory, or esthetic effects but also information concerning economic, social, and other benefits or detriments that will result from the undertaking.

(e) *Elements of the case report.* The report on which the Council relies for comment shall consist of:

(1) A report from the Executive Director to include a verification of the legal and historical status of the property; an assessment of the historical, architectural, archeological, or cultural significance of the property; a statement indicating the special value of features to be most affected by the undertaking; an evaluation of the total effect of the undertaking upon the property; a critical review of any known feasible and prudent alternatives and recommendations to remove or mitigate the adverse effect;

(2) A report from the Agency Official requesting comment to include a general discussion and chronology of the proposed undertaking; when appropriate, an account of the steps taken to comply with section 102(2)(A) of the National Environmental Policy Act of 1969 (83 Stat. 852, 42 U.S.C. 4321); an evaluation of the effect of the undertaking upon the property, with particular reference to the impact on the historic, architectural, archeological and cultural values; steps taken or proposed by the agency to take into account, avoid, or mitigate adverse effects of the undertaking; a thorough discussion of alternate courses of action; and, if applicable and available, a copy of the draft environmental statement prepared in compliance with section 102(2)(C) of the National Environmental Policy Act of 1969;

(3) A report from any other Federal agency having under consideration an undertaking that will concurrently or ultimately affect the property, including a general description and chronology of that undertaking and discussion of the relation between that undertaking and the undertaking being considered by the Council;

(4) A report from the State Historic Preservation Officer to include an assessment of the significance of the property; an identification of features of special value; an evaluation of the effect of the undertaking upon the property and its specific components; an evaluation of

known alternate courses of action; a discussion of present or proposed participation of State and local agencies or organizations in preserving or assisting in preserving the property; an indication of the support or opposition of units of government and public and private agencies and organizations within the State; and the recommendations of his office;

(5) A report by any applicant or potential recipient when the Council considers comments upon an application for a contract, grant, subsidy, loan, or other form of funding assistance, or an application for a Federal lease, permit, license, certificate, or other entitlement for use. Arrangements for the submission and presentation of reports by applicants or potential recipients shall be made through the Agency Official having jurisdiction in the matter; and

(6) Other pertinent reports, statements, correspondence, transcripts, minutes, and documents received by the Council from any and all parties, public or private. Reports submitted pursuant to this section should be received by the Council at least two weeks prior to a Council meeting.

(f) *Coordination of case reports and statements.* In considerations involving more than one Federal department, either directly or indirectly, the Agency Official requesting comment shall act as a coordinator in arranging for a full assessment and discussion of all interdepartmental facets of the problem and prepare a record of such coordination to be made available to the Council. At the request of the Council, the State Historic Preservation Officer shall notify appropriate governmental units and public and private organizations within the State of the pending consideration of the undertaking by the Council, and coordinate the presentation of written statements to the Council.

(g) *Council meetings.* The Council does not hold formal hearings to consider comments under these procedures. Two weeks notice shall be given, by publication in the FEDERAL REGISTER, of all meetings involving Council review of Federal undertakings in accordance with these procedures. Reports and statements will be presented to the Council in open session in accordance with a prearranged agenda. Regular meetings of the Council generally occur on the first Wednesday and Thursday of February, May, August and November.

(h) *Oral statements to the Council.* A schedule shall provide for oral statements from the Executive Director; the referring Agency Official presently or potentially involved; the applicant or potential recipient, when appropriate; the State Historic Preservation Officer; and representatives of national, State, or local units of government and public and private organizations. Parties wishing to make oral remarks shall submit written statements of position in advance to the Executive Director.

(i) *Comments by the Council.* The comments of the Council, issued after consideration of an undertaking at a

Council meeting, shall take the form of a three-part statement, including an introduction, findings, and a conclusion. The statement shall include notice to the Agency Official of the report required under section 800.8(j) of these procedures. Comments shall be made to the head of the Federal Agency requesting comment or having responsibility for the undertaking. Immediately thereafter, the comments of the Council will be forwarded to the President and the Congress as a special report under authority of section 202(b) of the Act and published as soon as possible in the FEDERAL REGISTER. Comment shall be available to the public upon receipt of the comments by the head of the Federal agency.

(j) *Report of agency action in response to Council comments.* When a final decision on the undertaking is reached by the Federal Agency, the Agency Official shall submit a written report to the Council containing a description of actions taken by the Federal Agency subsequent to the Council's comments; a description of actions taken by other parties pursuant to the actions of the Federal Agency; and the ultimate effect of such actions on the property involved. The Council may request supplementary reports if the nature of the undertaking requires them.

(k) *Records of the Council.* The records of the Council shall consist of a record of the proceedings at each meeting, the case report prepared by the Executive Director, and all other reports, statements, transcripts, correspondence, and documents received.

(l) *Continuing review jurisdiction.* When the Council has commented upon an undertaking pursuant to Section 800.6 such as a comprehensive or area-wide plan that by its nature requires subsequent action by the Federal Agency, the Council will consider its comments or approval to extend only to the undertaking as reviewed. The Agency Official shall ensure that subsequent action related to the undertaking is submitted to the Council for review in accordance with § 800.4(e) of these procedures when that action is found to have an adverse effect on a property included in or eligible for inclusion in the National Register.

§ 800.7 Other powers of the Council.

(a) *Comment or report upon non-Federal undertaking.* The Council will exercise the broader advisory powers, vested by section 202(a) (1) of the Act, to recommend measures concerning a non-Federal undertaking that will adversely affect a property included in or eligible for inclusion in the National Register: (1) upon request from the President of the United States, the President of the U.S. Senate, or the Speaker of the House of Representatives, or (2) when agreed upon by a majority vote of the members of the Council.

(b) *Comment or report upon Federal undertaking in special circumstances.* The Council will exercise its authority to comment to Federal agencies in certain special situations even though written notice that an undertaking will have an

effect has not been received. For example, the Council may choose to comment in situations where an objection is made to a Federal agency finding of "no effect."

§ 800.8 Criteria of effect.

A Federal, federally assisted, or federally licensed undertaking shall be considered to have an effect on a National Register property or property eligible for inclusion in the National Register (districts, sites, buildings, structures, and objects, including their settings) when any condition of the undertaking causes or may cause any change, beneficial or adverse, in the quality of the historical, architectural, archeological, or cultural character that qualifies the property under the National Register Criteria.

§ 800.9 Criteria of adverse effect.

Generally, adverse effects occur under conditions which include but are not limited to:

- (a) Destruction or alteration of all or part of a property;
- (b) Isolation from or alteration of its surrounding environment;
- (c) Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- (d) Transfer or sale of a federally owned property without adequate conditions or restrictions regarding preservation, maintenance, or use; and
- (e) Neglect of a property resulting in its deterioration or destruction.

§ 800.10 National Register criteria.

(a) "National Register Criteria" means the following criteria established by the Secretary of the Interior for use in evaluating and determining the eligibility of properties for listing in the National Register: The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association and:

- (1) That are associated with events that have made a significant contribution to the broad patterns of our history; or
- (2) That are associated with the lives of persons significant in our past; or
- (3) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (4) That have yielded, or may be likely to yield, information important in prehistory or history.

(b) *Criteria considerations.* Ordinarily cemeteries, birthplaces, or graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in na-

ture, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

(1) A religious property deriving primary significance from architectural or artistic distinction or historical importance;

(2) A building or structure removed from its original location but which is

the surviving structure most importantly associated with a historic person or event;

(3) A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building directly associated with his productive life;

(4) A cemetery which derives its primary significance from graves of persons of transcendent importance, from age, from distinctive design features, or from association with historic events;

(5) A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived;

(6) A property primarily commemorative in intent if design, age tradition, or symbolic value has invested it with its own historical significance; or

(7) A property achieving significance within the past 50 years if it is of exceptional importance.

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EXECUTIVE OFFICE OF THE PRESIDENT
COUNCIL ON ENVIRONMENTAL QUALITY
722 JACKSON PLACE, N. W.
WASHINGTON, D. C. 20006

August 30, 1976

MEMORANDUM FOR HEADS OF AGENCIES

SUBJECT: Analysis of Impacts on Prime and Unique Farmland
in Environmental Impact Statements

This memorandum provides guidance to Federal agencies on how to carry out evaluation of the impact of major agency actions on prime and unique farmland in the course of preparing environmental impact statements (EIS). *

Paragraph 101(b)(4) of National Environmental Policy Act (NEPA) establishes a Federal policy to preserve important historic, cultural and natural aspects of our national heritage and maintain, wherever possible, an environment which supports diversity and variety of individual choice. This policy should be understood to include highly productive farmlands.

Efforts should be made to assure that such farmlands are not irreversibly converted to other uses unless other national interests override the importance of preservation or otherwise outweigh the environmental benefits derived from their protection. These benefits

* Prime farmlands are those whose value derives from their general advantage as cropland due to soil and water conditions. Unique farmlands are those whose value derives from their particular advantages for growing specialty crops.

stem from the capacity of such farmland to produce relatively more food with less erosion and with lower demands for fertilizer, energy, and other resources. In addition, the preservation of farmland in general provides the benefits of open space, protection of scenery, wildlife habitat and, in some cases, recreation opportunities and controls on urban sprawl.

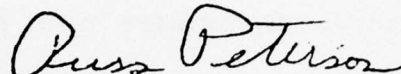
As part of its policy to preserve the Nation's prime farm, range, and forest lands, the Department of Agriculture (USDA) has recently announced a general policy to establish and keep current an inventory of prime and unique farmland. Recent estimates conclude that of 1.4 billion acres of privately owned lands in the United States, approximately 275 million are classed as prime farmlands.

Federal agencies should attempt to determine the existence of prime and unique farmlands in the areas of impact analyzed in environmental impact statements prepared in compliance with Section 102(2)(C) of the NEPA. This should include threats to the continued use and viability of these farmlands not only from direct construction activities, but also from urbanization or other changes in land use that might be induced by the Federal action.

The Department of Agriculture, at its field locations throughout the country, is committed to assisting Federal agencies in the identification of prime or unique farmlands, and in nearly all cases has complete information on land areas which may be impacted. This should simplify and reduce the burden on other agencies in carrying out their impact analysis. Initial contact should be made with the USDA Land Use Committee in the state where the lands under consideration are situated. This Committee can be located by contacting either the Chairman of the USDA Rural Development Committee in the state, or any nearby USDA office. The State Land Use Committee will then help facilitate contacts with the appropriate USDA office and personnel so that all available information on prime and unique farmlands within the project area is accessible to the agency preparing an EIS.

Finally, the Department of Agriculture has agreed to place a major new emphasis on the review and evaluation of draft environmental impact statements with respect to impacts on prime and unique farmland. In undertaking these reviews, USDA will use soil, range, forest, water resource, and other surveys and information which may be applicable. This service of the Department should help improve the quality of all EISs.

Further information on where agencies may obtain assistance in identifying prime and unique farmland and analyzing significant impacts on it from agency activities can be obtained from State Soil Conservation Service (SCS) offices shown on the attachment. Information on new USDA procedures to review impact on prime and unique farmlands in draft EISs can also be obtained from these sources.


Russell W. Peterson
Chairman

Attachment

BEST AVAILABLE COPY

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APPENDIX A: Pertinent Laws, Regulations, and Orders

National Environmental Policy Act

DOT Order 5610.1B

CEQ Guidelines

FAA Order 5050.2B

APPENDIX B: Supplemental Laws, Regulations, and Orders

List of States with Indirect Source Regulations

States with Comprehensive Environmental Impact Statement Requirements

Municipal Noise Ordinances: 1975

APPENDIX C: Aircraft Noise Data

Noise Exposure Forecast Calculation Summary

EPNL Tables

Noise Criteria

Aviation Noise Abatement Policy

Impact of Noise on People

APPENDIX D: Flood Hazard Guidelines

Executive Order 11296

FAA Order 1000.20

U.S. Water Resources Council Guidelines

APPENDIX E: Designated State Contacts for Coastal Zone Management

APPENDIX F: Air Quality Data

Box Model Information

National Ambient Air Quality Standards

Finite Line Source Dispersion Model

APPENDIX G: Relocation Assistance and Payments (Example)

APPENDIX H: Procedures for the Protection of Historic and Cultural Properties

APPENDIX I: Prime and Unique Farmland